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The Relationship Between The Type of Physical Education Program and Student's Academic Achievement, Leisure Time Activity and Perceived Competence

By

James Allen Jenkyns

A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfillment of the requirements for the degree of Masters of Arts

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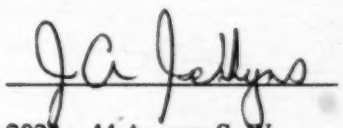

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Abstract

Advocates of Quality Daily Physical Education (QDPE) have stated that a daily physical education (PE) program with quality instruction will produce children who are happier, healthier, and honed for learning. One purpose of this study was to determine if there was a significant difference between grade five students in non-QDPE and QDPE programs in four areas: academic achievement (AA), perceived athletic competence (PAC), perceived scholastic competence (PSC) and leisure time activity (LTA). A second purpose of this study was to determine if PSC and LTA each had a relationship with AA (irrespective of the type of PE program). A third purpose of the study was to determine if PAC had a relationship with LTA (irrespective of the type of PE program). The results of this study indicate that QDPE does not hinder AA. QDPE was found to influence some forms of LTA. The other findings are not specific to QDPE alone, but both PE programs. The findings indicate that PAC is related to LTA and PSC is related to AA, which supports the competency motivation theory (Harter, 1985).

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Abbreviations

AA	Academic Achievement
CAHPERD	Canadian Association of Health, Physical Education, Recreation and Dance
CBE	Calgary Board of Education
CFLRI	Canadian Fitness and Lifestyle Research Institute.
CMT	Competency Motivation Theory
LTA	Leisure Time Activity
LTEQ	Leisure Time Exercise Questionnaire (Godin & Shephard, 1985)
LTEQ-M	Modified Leisure Time Exercise Questionnaire (The author, 1996)
non-QDPE	A PE program in which a generalist teacher conducts the PE instruction and the frequency of PE instruction per week is four days or less.
PA	Physical Activity
PAC	Perceived Athletic Competency
PC	Perceived Competency
PE	Physical Education instructional program in schools.
PSC	Perceived Scholastic Competency
QDITC	The Qualitative Dimensions of Lesson Introduction, Task Presentation, and Lesson Closure
QDPE	Quality Daily Physical Education
SPC	Self-Perception Profile for Children (Harter, 1985) entitled "What I Am Like".

YR-LTA	Year Recall of organized Leisure Time Activity that is not part of the PE instructional program.
YR-com	Is the recall of the last 12 months of LTA that took place in community
YR-sch	Is the recall of the last 12 months of LTA that took place in the school that is not part of the PE instructional program.

CHAPTER ONE

Introduction

> Children are not born with knowledge, as a Cartesian might have maintained; nor is knowledge simply thrust upon them, as the British empiricist philosophers had argued. Instead, each child must construct his own forms of knowledge painstakingly over time, with each tentative action or hypothesis representing his current attempt to make sense of the world (Gardner, 1991, p. 26).

Educators and philosophers through time have had many beliefs on how humans acquire knowledge, as well as how to maximize the acquisition of knowledge. Alberta Education (1993) states "maximum learning occurs when all the efforts and expectations of various agencies affecting children complement each other" (p. vi). The ultimate goal of education is to "develop the abilities of the individual in order to fulfill personal aspirations while making a positive contribution to society" (Alberta Education, p. vi).

Alberta Education (1993, 1998 draft) further recognizes the school, as well as the home, as agencies in the overall education of students. Physical education (PE) is considered to be an integral part of the school agency contributing to the overall education of children. The aims of PE as outlined by Alberta Education are to physically educate students so they can establish an interest in, and an appreciation of, physical activity by helping them develop motor skills, develop and maintain physical fitness, add to their knowledge, and by promoting positive interpersonal relationships. As well, students are to develop the recognition that physical activity is an essential component of an active, healthy lifestyle. The aims of PE should be achievable without a negative

effect on the academic achievement in other subjects; given sufficient time is allotted to all subjects, including PE. "School jurisdictions should ensure that sufficient time is provided for students to achieve the goals of the elementary program" (Alberta Education, 1993, p. xi). However, in many schools the time and resources allocated to teaching PE are being eroded, or could be deemed suspect of being able to achieve the goals of PE because of the minimum time allocation. There is concern that student academic achievement will be compromised if more time is allocated to PE. Alberta Education recognizes and states that time allocated to PE does not limit academic achievement (Alberta Education, 1998 draft).

PE programs have responded to an enormous number of influences and trends from Canadian society. Canadians value fitness but they tend to believe it is a personal responsibility, as a result, it has little emphasis in some school PE programs. Canadians also value sport and the professionalization of sport is occurring at all levels of society. Playing sport for fun has often been replaced with sponsored teams in our schools and communities where the emphasis is on playing to win. Sport may also dictate fashion with our youth (e.g., it is presently fashionable to wear tear away sweat suits emblazoned with Adidas or Nike). Provincial governments in Canada are practicing restraint with their education budgets. As a result of these influences and others there are many types of PE programs in existence in our schools. Hellison and Templin (1991) describe school PE programs ranging from organized recess to the competitive achievement model and still others emphasizing fitness or personal-social development. Regardless of the model the teachers' values and intentions (Hellison & Templin) affect all the lesson plans.

A major initiative of the Canadian Association for Health, Physical Education, Recreation and Dance (CAPHERD) called Quality Daily Physical Education (QDPE) began in the seventies. The primary focus of QDPE was to promote daily instruction of PE in schools by a trained physical education specialist. QDPE has been summarized by several authorities (e.g., CAPHERD, 1988; Kirchner & Fishburne, 1995; Turkington, 1987) to have the following elements: daily instruction, maximum active participation, a wide range of movement experiences, fitness activities in each lesson, qualified competent teachers, adequate and appropriate facilities and equipment, a program based on child growth and development characteristics, an opportunity to develop positive attitudes toward physical activity, and the provision of suitable competition.

The daily element of QDPE is easy to define; the students receive instruction in PE every school day. However, the amount of time for PE classes can vary (e.g., 30 min/day, 45 min/day or 15 min/day). It is more difficult to define the quality component of QDPE. The aforementioned authorities feel that the quality of a program is somewhat dependent upon the qualifications and competence of the teacher. However, as Hellison and Templin (1991) suggest, the personal values of the teacher also have an impact on the quality of the PE program. The teacher can affect many aspects of a program to achieve quality. For example, teacher's effective management skills can maximize the amount of time a child engages in an activity by avoiding lineups and providing each child with a piece of equipment for continuous practice. The teacher's competence in a wide variety of activities and a willingness to learn and share these new and current activities with his/her classes can lead to diversify the program. It is suggested that children should experience a range of movement activities and teachers who offer such a program will

help children experience some activities that will be of interest to them. The teacher who has a reasonable knowledge of the growth and development of children can structure his/her classes with appropriate activities leading to success. The teacher can influence whether the PE curriculum is fun, motivating and progressive. In addition, the teacher can encourage the development of a positive attitude towards a physically active lifestyle. Each class can have a fitness component helping to maintain fitness levels as well as providing knowledge to help children plan and execute an active lifestyle. However, along with the teacher's qualifications and personal values many other factors may influence the quality of a PE program. School boards and schools differ in allocation of space, facilities and equipment provided and this can also influence each child's experiences.

All of these QDPE elements, if present in a school PE program, would help fulfill the goals and aims of physical education as outlined in the Program of Studies document (Alberta Education, 1993, 1998 draft). Alberta Education states students should develop efficient and effective motor skills (psychomotor domain), and apply these to a wide variety of physical activities. The Program of Studies (Alberta Education) also states the physical education program should assist the individual in developing and maintaining physical fitness. In a QDPE program the children would be more likely to experience fitness activities than in a non-QDPE program.

The Program of Studies (Alberta Education, 1998 draft) states physical education should assist the individual in developing knowledge and understanding while promoting individual competence in and appreciation of physical activity. To this end physical education instructors should design their programs to address student needs as well as

allowing for student choice and ownership of course content. In addition, physical education teachers should help each student experience success, whether they are learning a new skill or refining a skill. The program will help promote student growth in the affective domain as well as the cognitive domain. In a QDPE program opportunities would exist for students to develop a positive attitude towards physical activity.

Regular physical activity is instrumental for the optimal growth and development of children according to the Canadian Fitness and Lifestyle Research Institute (1997). The CFLRI also states that two thirds of children age five through seventeen are not active enough to promote optimal health. They furthermore state that children should engage in half an hour of vigorous play and walk an additional hour throughout the day to have a sufficient amount of activity for wellbeing. Physical education classes in school may be the main physical activity in which some children engage. Riddoch, Savage, Murphy, Cran, and Boreham, (1991) found that one third of their 3211 subjects (ages, 11 to 18 years) were not active outside of physical education class. The Surgeon General's summary states one-fourth of the young people (ages 12 to 21 years) report no vigorous physical activity in their lifestyle (U. S. Department of Health and Human Services, 1996). The Heart and Stroke Foundation of Alberta found that 63% of Canadian children played actively with friends at least three times a week but they rate this level of activity only as a "C" on their report card on the health of Canadian children (February 3, 1998 - News Release). This research indicates a need to address inactivity of children. Educating children to adopt an active lifestyle may be one way to address this need as well as fulfill a mandated goal of physical education in Alberta. The CFLRI also states that children who engage in more physical activity experience an increased sense of

physical competence. A sense of physical competence coupled with a current shift in societal value in favor of being active may encourage children to pursue physically active leisure pursuits.

One could question whether the long-term goal of physical education would see be realized because of the present political and social climate in Alberta. Many politicians and some educators consider physical education a "frill" or "a necessary evil" because it takes classroom time away from academics. This attitude, coupled with the minimum teacher training in physical education that an elementary generalist teacher acquires (CAPHERD, 1988; Janzen, 1995) has edified itself in PE programs which may not be meeting the goals and aims of Alberta Education nor the physical expenditure needs of children.

Hellison and Templin (1991) argue that the fitness movement has missed the youth of North America as well as the poor. It has been unfortunate that the youth have been missed because evidence exists to show that inactive children are more likely to become inactive adults (Corbin & Pangrazi, 1998). It has been long recognized that an active lifestyle reduces a person's risk of coronary heart disease (U. S. Department of Health and Human Services, 1996). Since one major goal of elementary PE is related to adopting an active lifestyle it is important to find out to what extent the type of PE program is related to student leisure time activity. It is expected that a QDPE program would offer students in schools more physical activity during the school day and also elicit higher physical activity rates during the students' leisure time. It is important to see if students who are in a QDPE program actually do participate in more activities and spend more time in those activities. Children should be accumulating at least 30 to 60

minutes of physical activity every day to receive optimal health benefits (Pangrazi, Corbin, & Welk, 1997). These researchers emphasize that heart disease is the result of the cumulative effect of poor lifestyle habits started in childhood. Childhood lifestyles may be the key to reduce the risk of heart disease in adults. Prevention in the form of an active lifestyle in childhood may greatly affect the health and functional fitness of an adult. Childhood is the optimal time to learn skills for later participation in lifetime activity. Dr. Anthony Graham, a Heart and Stroke Foundation spokesman and a practicing cardiologist, states that childhood is the time when people develop lifestyle habits (Heart and Stroke Foundation February 3, 1998- News Release).

The Canadian Association for Health, Physical Education, Recreation and Dance (CAHPERD, nd) states that students have exhibited the following benefits from active participation in a QDPE program: better health, less susceptibility to stress, earlier maturation and independence. As well, students have been shown to play more amicably together and exhibit less aggressive behavior. In addition, students show improved academic achievement. Few studies have been done to date that have examined the type of PE program with academic achievement. However the few that have examined this question suggest that increased school time spent in PE instruction may increase, or at the very least show no hindrance, to academic achievement. Sallis, et al. (1999) stated that their study and three other studies they investigated showed that increased time spent in PE did not harm academic achievement. Despite these benefits, Canadian provincial governments have not mandated daily physical education for elementary age school children (Trottier, 1987). Alberta Education's position states "The amount of time devoted to physical education, and the frequency of the activities, is a matter that may be

decided locally" (Alberta Education, 1993, p. C.1). Because local schools can decide on the PE schedule some schools choose not to provide daily PE for their students. As a result, these schools are not meeting the minimum recommended time allocation for a QDPE program. The program of studies states 10% of the total curriculum time should be devoted to physical education and health (Alberta Education). A calculation of 10 percent of the total school day for elementary children is 30 minutes per day. In Alberta, only 123 schools in '97 - '98 and 173 schools in '98 - '99 were awarded the Recognition Award (RAP) for their QDPE program. To qualify for the RAP awards schools must meet the 30 minutes per day minimum.

The current political and social climate of Alberta has created many concerns for educators. Two of these concerns include dealing with reduced funding and a public focus on provincial achievement exam scores as a measure of school success and accountability. A third concern is the insistence by the private sector that Alberta schools graduate students with more science and technology knowledge so that companies are better able to compete on the global market. The perception of the public in general is that PE is costly and takes valuable time away from learning, compromising academic achievement. Also, a new draft of the program of studies for physical education (Alberta Education, 1998 draft) evolved from public concern that the PE curriculum should focus less on competition and instead develop attitudes favoring active living, positive interpersonal skills, sense of self worth, goal setting, and maintaining or improving academic achievement. The concern that Alberta students find their niche in the global market has resulted in a new elementary science curriculum and an increased emphasis and value upon science instruction, as well as new importance on the integration of

technology in all aspects of teaching and learning. An example of how these concerns affect a school was apparent in an elementary school in Calgary in the spring of 1995. The timetable was being stressed by the demand for 30 more minutes per week (up from 60 minutes) to fulfill the revised science curriculum by Alberta Education. The staff initially wanted to remove the time from physical education instruction time and designate it as science time. However, parental, administrative and physical education staff convinced the other staff members to rethink a solution. The music program was revised to help accommodate the new science time demand. Should each subject be ranked in order of importance to determine time allotment? Can we really say that reading is more important than PE? Physical educators might counter with "can we learn to read without personal well being?" Fishburne (1983) stated all subjects should be viewed equally. They all contribute to the child's development. Are we not teaching the whole child?

In the overall picture of elementary schooling student achievement should be viewed in the cognitive, psychomotor and affective domains. Improvements in one domain should not been seen as detracting from possible improvement in the others. Perhaps, improvements in one domain may actually enhance the achievement in the other two domains. It may be prudent therefore, to examine whether students who are afforded more time in their daily school schedule for quality PE instruction achieve academic scores comparable to their peers who spend less time in PE instruction and hence more time in "academic" subjects. There is evidence that regular participation in physical activity can help to increase self-esteem, improve self-concept, enhance psychological well-being, increase physical competence and overcome boredom (CFLRI, 1997).

Perceived competence, an aspect of the affective domain, has been shown to have a positive influence on academic achievement. Perceived competence is the feeling or sense an individual has that they have the ability to master a task (Harter, 1981). Harter (1978) states that students with higher levels of perceived competence will exhibit increased intrinsic motivation, participation and positive affect while engaged in tasks. Roberts, Kleiber and Duda (1981) found that individuals with high levels of perceived athletic competence sought and selected environments where they would be able to demonstrate their competence. Feltz and Petlichkoff (1983) found that individuals who perceive themselves as highly competent at a particular skill would persist longer at a task and would maintain interest in mastering the skill. These positive characteristics of individuals with elevated perceived competence make it prudent to examine the relationship between the type of PE program, perceived scholastic competence, and its influence on academic achievement. Evidence from such a study would be useful to schools making decisions regarding the type of PE program they are planning to endorse.

Purpose of the Study

The main purpose of this study was to compare two different types of PE programs (QDPE and non-QDPE) and examine the relationship between the type of PE program and student academic achievement, leisure time activity, perceived scholastic competence and perceived athletic competence. Four specific questions were of interest:

1a. Is there a significant difference between two types of PE programs and student academic achievement (AA)?

1b. Is there a significant difference between two types of PE programs and the level of student perceived athletic competence (PAC)?

1c. Is there a significant difference between two types of PE programs and the level of student perceived scholastic competence (PSC)?

1d. Is there a significant difference between two types of PE programs and the amount of student leisure time activity (LTA)?

In addition, the study examined whether the level of student leisure time activity and perceived scholastic competence was related to academic achievement. Two specific questions were of interest:

2a. Does the level of PSC have a relationship with AA (irrespective of the type of PE program)?

2b. Does the amount of LTA have a relationship with AA (irrespective of the type of PE program)?

Lastly, this study examined whether the level of perceived athletic competence was related to leisure time activity levels. The specific question was:

3. Does the level of PAC have a relationship with the amount of LTA (irrespective of the type of PE program)?

Significance of the Study

Bauni Mackay, a former president of the Alberta Teachers' Association (ATA) stated the ATA's position since 1975 is that PE should be an essential component of every child's curriculum K through grade 12. However, despite the ATA's pressure Alberta has not implemented a policy requiring daily PE (MacKay, 1997). Little research has examined the relationship between the type of PE program (i.e., quality and frequency of instruction) and academic achievement. There are relatively few studies that have examined the type of PE program and its relationship to the amount of physical

activity of students during leisure time. Likewise, little is known about how the type of PE program might impact the student's perceived athletic competence and/or perceived scholastic competence. Although there are some studies that suggest that academic achievement was not hindered when students received more PE than their peers, only one study to date has examined the impact of a QDPE type of program (i.e., the SPARK program) on academic achievement (Sallis et al., 1999).

Few studies have compared QDPE and non-QDPE programs and the relationship of QDPE with AA, PSC, PAC, and LTA. This study will contribute to the body of literature in all of these areas and the overall benefit of QDPE for elementary aged children. The results will provide insights that may be useful to schools, school boards and provincial governments making decisions regarding the type of PE program they plan to endorse.

Definitions

For the purposes of this research the following terms have been operationally defined.

1. Leisure time activity (LTA) has two components, discretionary time and type of activity. Discretionary time is any time outside of PE class including recess and lunch hour. Activity will be defined as "bodily movement in which you move your arms and legs" (Sallis et al., 1996, p. 842). Motivation is not included in the definition because children often participate in activity selected for them by their parents. Therefore, any physical activity (body movement) participated in during their discretionary time (freely chosen and/or selected by their parents) will be considered as leisure time activity.

2. Perceived competence is the sense that a child has relating to his/her ability to master a task (Harter, 1981). Harter considers perceived competence to be domain specific. She has identified six subscales: scholastic competence, social acceptance, athletic competence, physical appearance, behavior conduct, and global self worth. For the purposes of this study only perceived scholastic competence and perceived athletic competence will be measured.

3. Perceived scholastic competence (PSC) is an individual's personal belief of how well they can complete and understand schoolwork.

4. Perceived athletic competence (PAC) is the individual's personal belief in their athletic ability in sports.

5. Quality daily physical education (QDPE) has the following elements: daily instruction, maximum active participation, a wide range of movement experiences, fitness activities in each lesson, qualified competent teachers, adequate and appropriate facilities and equipment, a program based on child growth and development characteristics, an opportunity to develop positive attitudes toward physical activity, and the provision of suitable competition (Turkington, 1987). For the purposes of this study QDPE is a physical education program that is taught daily by a PE specialist.

6. Non-QDPE is a physical education program where the frequency of instruction is less than daily and a generalist teacher provides the instruction.

Assumptions and Limitations

Assumptions

1. Physical education specialists at the elementary level are capable of planning and executing a quality physical education program.

2. The students, in the four schools selected for this study, are similar to those of other elementary schools of similar demographics.

3. The children, in the schools selected for this study, have similar access to facilities, financial resources and parental support for recreational opportunities in their leisure time.

Delimitations

1. The sample will be selected from schools within the Calgary, Alberta, area on the basis of paired school suitability, teacher willingness and administrative support for the study.

2. Only four schools in Calgary, Alberta will be asked to volunteer for the study.

3. Only grade five students will be selected for participation in this study.

Limitations

1. Statistical significance may be difficult to detect from the analysis of the data because of the small sample size.

2. Respondents will respond to the questionnaire items thoughtfully, honestly and in accordance with their actual feelings, behaviors and attitudes, and will not respond according to what they consider socially acceptable.

3. Intact class groups will be used to minimize the interruption of the participant classes, the non-participant classes and the school schedule.

Hypotheses

In this study, there are four primary hypotheses.

1. Students who participate in a QDPE program will achieve higher ratings of academic achievement than will students who participate in a non-QDPE program.

2. Students who participate in a QDPE program will have higher levels of perceived athletic competence (PAC) than will students who participate in a non-QDPE program.

3. Students who participate in a QDPE program will have higher levels of perceived scholastic competence (PSC) than will students who participate in a non-QDPE program.

4 Students who participate in a QDPE program will have higher ratings of physical activity in leisure time activity than will students who participate in a non-QDPE program.

CHAPTER TWO

Review of Literature

The current political and social climate in Alberta has impacted physical education. Education and health programs are contending with budget cutbacks from a provincial government that has advocated "do more with less". At the same time the provincial government has demanded more accountability of civil servants and citizens for money spent on education and health. Even the private sector is increasing demand on the education system by insisting that graduating students be prepared to compete in a global market. All these demands have focused the attention of both the public and the private sector on achievement exam scores as a significant measure of school accountability. The health community is advocating the health benefits of regular physical activity yet, at the same time the government perceives a drain on the healthcare system with unnecessary medical procedures and doctor visits. This review of literature will highlight the current research related to physical activity and academic achievement (AA), as well as explore the theory of competency motivation as a possible link between physical activity and AA. For the purposes of this thesis physical activity is specifically examined in terms of physical education instruction in schools and leisure time activity. The research findings and recommendations of educational and health authorities will be used to illustrate the relationship between physical activity and AA. As provincial governments and schools are involved in making major decisions about physical activity opportunities for children this review may provide valuable information.

The literature pertaining to physical activity and AA has been explored in the following areas. First, quality, daily physical education (QDPE) and non-QDPE

programs are examined to see if the AA of the students differed in the schools that offered the two types of PE programs. Secondly, the literature on possible links between physical activity involvement and AA is scrutinized. Thirdly, the literature on relationships between the quantity and quality of physical activity and the manifestation of an active lifestyle in leisure time activity (LTA) is explored. As well, competence motivation theory is discussed in terms of providing a framework for understanding the possible link between physical activity and AA. Lastly, the literature on the relationship between perceived competency and leisure time activity is examined.

QDPE and non-QDPE

The two features distinguishing QDPE from non-QDPE programs are daily instruction and the quality of the instruction. Daily instruction was a primary focus of Canadian Association for Health, Physical Education, Recreation and Dance (CAHPERD) after The 1976 National Report on New Perspectives for Elementary School Physical Education Programs in Canada (as cited in Martens, 1982) which evaluated existing elementary PE programs. Daily instruction of PE was praised and promoted as a means of reducing the risk factors of coronary heart disease in school age children because they would be active on a regular basis. As a result, the primary focus of daily PE instruction was to improve the fitness levels of children. Yet the overall picture of youth fitness is still poor. The Heart and Stroke Foundation found one third of Canadian children are not active enough to develop cardiovascular fitness (Heart and Stroke, 1998) "Dr. John Lefebre says 20 % of Canadian children and teens are overweight" (cited in Lechky, 1994, p78). Lefebre further states that 40 to 90 % of these children will be obese adults. Fishburne (1990) states that an obese preschooler has a

25% chance of becoming an obese adult. If the child is an obese teenager, they have a 75% chance of being obese for life. The consequences of poor fitness levels are manifested in high cardiovascular diseases (CVD). CVD rates in unfit individuals are seven to eight times higher than in fit men and women and a low level of physical activity is the major risk factor for coronary heart disease and all-cause mortality (Blair, Kohl, & Gordon, 1992). High activity rates can provide a buffer even for risk factors including smoking, high blood pressure (>140 mm Hg), elevated cholesterol levels (> 6.75 mmol/L), and family history of heart disease (Blair et al.). As a consequence of choosing an inactive lifestyle, two-thirds of Canadians are risking their health and quality of life as a result of this lifestyle choice (CFLRI, 1998). The number of premature deaths could be reduced as much as 20% if mildly active and sedentary Canadians became more active (CFLRI, 1995). If all Canadians became active, millions of dollars could be saved from being spent in the health care system for the treatment of heart disease alone (CFLRI, 1998). Further it is estimated that 25% of all deaths due to heart disease in 1993 could have been avoided because they were a result of inactivity. The benefits of an active lifestyle (e.g., daily or regular physical activity) have been well documented.

An educational shortcoming of having only a fitness focus for instructional PE programs can result in programs where children are not challenged in the cognitive domain in their PE lessons. This was found to be true in schools that had jumped on the daily PE "band wagon" without a PE specialist to conduct the classes (Kirk, 1990). Kirk described this as neglecting the total learning experience of the children. He further argues that all teachers, specialists and generalists, must engage in teaching practice that combines the psychomotor with the cognitive domain.

Therefore, the focus of QDPE became how to improve the "quality" of the PE instruction. The literature indicates that quality PE occurs when students are being challenged in both the cognitive and psychomotor domains. Research findings support the premise that quality instruction is more likely to occur in a PE lesson conducted by a PE specialist than in one directed by a generalist teacher. Children who received instruction from a PE specialist were found to be engaged more with material appropriate to success in the content (Academic Learning Time in PE) than when a classroom teacher conducted the PE lesson (Faucette & Hillidge, 1989). Students were more likely to experience physical improvements in skill and fitness as a function of the more effective management techniques employed by specialist teachers (Faucette, McKenzie, & Patterson, 1990). Placek and Randall (1986) found that specialists conduct their classes so that students spend more time in skill practice, less time in game play and almost twice as much time in fitness activities than do non-specialist (i.e. generalist) teachers. Research indicates that students spend less time in management, off task behavior and waiting when a PE specialist conducted the PE class (Faucette & Hillidge; Faucette, et al.). It has been found that in lessons taught by PE specialists, the children spent significantly more time being active, receiving knowledge and doing skill drills compared to students in lessons taught by a generalist teacher (McKenzie, et al., 1995). Also, Behets (1994) found that lessons taught by PE specialists differed significantly from those of a generalist teacher because the specialist taught fewer tasks, allowed children to practice longer, gave more feedback during practice and designed more tasks for students to work independently.

Students in a QDPE program have been found to be more successful in

developing motor skills than students in non-QDPE (Marshall & Bouffard, 1994). Marshall and Bouffard used the Test of Gross Motor Development to compare locomotor skill development between obese and non-obese children in QDPE and non-QDPE schools. They found that children in QDPE schools outperformed children from non-QDPE schools in 12 of 16 grade, gender, and body type (obese and non-obese) group comparisons.

In addition to challenging students in the psychomotor domain and the cognitive domain, PE specialists have been shown to have a greater impact on the affective domain of their students than classroom teachers. Students' attitudes towards schools were found to be more positive when students were taught PE by a specialist (Martens, 1982). This positive attitude towards school may have a positive effect on learning.

CAHPERD recognized the educational pitfalls of promoting only "daily" PE. The concept of quality instruction was recognized as missing from its mission statement. Consequently CAHPERD added "quality" to its promotion of daily PE and QDPE was implemented in 1982 (CAHPERD, 1987).

QDPE may be one of the best preventative measures our society can provide to combat degenerative diseases such as CVD due to inactivity. A QDPE program should provide students with an active environment daily. QDPE programs can play a critical role in modifying student's values towards activity because they can reach all school age children. The goals of QDPE programs include statements relating to an increase in knowledge about physical activity, development of behavioral and motor skills that promote lifelong activities, and encouragement of physical activity outside of school (Anderson, Baranowski, & Cormack, 1998). QDPE programs are recognized by the

Canadian Cardiovascular Society, the Canadian Fitness and Lifestyle Research Institute, the Canadian Medical Association and Gallup Canada (as cited in CAHPERD, 1999) as beneficial for all children in Canada.

For the purposes of this study, the quality of the PE program was distinguished on the basis that a PE specialist conducted the planning and instruction. Students of QDPE programs should be more active, be challenged in the cognitive domain and psychomotor, and be positively influenced in the affective domain if their PE experience is conducted by a PE specialist.

Physical Activity and Academic Achievement

Research literature does not always differentiate PE instruction from physical activity conducted outside of school class settings. For the purposes of this study physical activity is defined as recreational physical activity involvement outside of PE class. PE is defined as physical activity that occurs in school physical education instructional classes. When the literature on physical activity encompassed both, the term PE/physical activity is used.

Researchers have investigated the question: Does increased PE/physical activity influence student AA? Correlational studies have examined AA with athletic participation (Hanks, 1979; Honea, 1990), with fitness levels (Keller, 1982), and with motor skill performance (Harris & Jones, 1982). Cross-sectional studies have related AA to student involvement in PE and/or athletics (Dwyer, Blizzard, & Dean, 1996). Other authors have examined learning in relation to altered mood states ranging from relaxation (Taylor & Taylor, 1989) to increased alertness (Shephard, 1996) thought to be caused by an increased supply of oxygen and/or glucose to the brain as a result of the increased

blood flow following PE/physical activity (Kirkendall, 1986; Young, 1979). There are only a few experimental studies (Dwyer, et al.; Ismail & Grubber, 1967; Shephard) examining the effect of increased PE/physical activity on student AA. Kirkendall (1986) reviewed the research in this area and concluded "that no study has shown that exercise hampered the intellectual performance and/or development [of it's participants]" (p. 58). Exercise is not synonymous with physical activity, but it is a form of physical activity.

An early investigation by Hanks (1979) examined the correlation of AA with athletic involvement to see if students who were physically active in athletics did better academically. A positive correlation between athletic participation (intramural and interscholastic) and academic success (measured as class rank) was found for high school students. Athletic participation was also positively correlated to many prosocial behaviors: high rate of retention, good school attendance, high educational expectations, as well as a good self-concept. This study further supports the statement that increased involvement in physical activity does not hinder the academic success of students. Given that athletic involvement correlates positively with AA, the relationship of physical activity in instructional PE programs may also be related to AA. Since all students participate in PE during their school years and since little research has been done to examine this relationship a need for further research is needed.

The relationship between physical activity and AA has also been examined in relation to specific school subjects. Harris and Jones (1982) found a positive and significant, albeit small, relationship between reading and mathematical ability with two motor performance skills. They concluded that a quality PE program with specific motor development activities, games, and rhythm activities might enhance AA. Their study

measured the relationship of eight motor activities with the Georgia Criterion Reference Test for Reading and Mathematics. The researchers suggested caution regarding this study primarily because the results did not strongly support the conclusions and they indicated there is a need for more research in this area.

Educational researchers have been critical of studies that only examine physical activity as a mechanism to influence student AA. They suggest that students exposed to extra fine arts instruction may also show AA benefits. Keller (1982) increased both fine arts instruction and PE instruction of grade two students. The students were randomly grouped into an exercise, music, or control group for a ten-month period. The exercise group received exercise classes four times a week in addition to the regular PE class. The music group received extra music classes and the control group maintained their regular school curriculum. The students' fitness levels were measured as changes in percent of body fat, heart rate recovery following a bicycle ergometer test and performance on the Canada Fitness Award test. The rating of student fitness was compared with their performance on the Stanford Achievement Test. Keller found no significant difference between the three groups. However, this study did show that elementary age children do benefit from increased time in a physical activity with improved fitness and that the extra PE time did not hinder AA.

Some educational researchers began to examine physiological changes as result of physical activity that might be related to improved AA. Although they did not examine AA directly, Taylor and Taylor (1989) stated that children receive a learning benefit from aerobic physical activity because of a state of relaxation that followed the physical activity. They confirmed this state of relaxation could last up to two hours and was

accompanied by enhanced creativity, better imagery, better problem solving, better task performance and improved mood states. In addition, the authors point out the long term benefits of regular exercise aside from improved physical fitness include: decreased anxiety, decreased aggression, increased self confidence, relief of frustration, improved resistance to stress, improved productivity and increased cognition. Young (1979) also examined physiological changes as a result of exercise on cognitive functioning and personality of adult subjects. Results of a ten-week exercise program indicated significant improvements on five of the six cognitive measures. It was postulated that cognition was improved because of more oxygen available and/or secondly, glucose was transported more efficiently to the brain as a result of the increased blood flow. This researcher suggests that these same physiological responses would be expected in children as well, however research would have to be done to support this statement. These benefits suggest a link between physical activity and potential gains in AA. Rarick (1980) believes motor experiences have an impact on cognitive functioning in children. The activity may influence the intellectual abilities needed for academic success. However, he feels researchers have not yet demonstrated the physiological connection between physical activity and cognitive functioning. Thus it appears from these studies that increased involvement in physical activity may be related to physiological responses that positively influence AA.

An alternative school program offered in the Columbus Public School District has not increased the amount of PE/physical activity. Nor have they looked for a link between PE/physical activity and AA. They have used the social experiences and concepts from PE/physical activity and integrated them into the other subject areas in an

attempt to positively influence AA (Stroot, Carpenter, & Eisnaugle, 1991). The students did not receive more PE instruction than other schools. Each week the students participated in three PE classes, plus daily structured physical activity directed by the classroom teachers in cooperation with the PE specialists. Physical education concepts, critical thinking, health and fitness were integrated into other subjects of their curriculum. Math, science and language arts were taught with physical education movement, themes and/or sports concepts such as teamwork and rules. Student marks from the alternative program were compared to all the other students in the Columbus district on the California Test of Basic Skills (CTBS). Their marks were higher than the average in math and reading for all grades, except grade two reading. "Attendance scores, surveys, and test scores provided the formal data suggesting that Westgate is successful; the smiling faces and enthusiasm of children as they continue to learn in a positive and supportive environment give the informal indication of Westgate's success" (Stroot et al., p. 53).

Other researchers have hypothesized that kinesthetic experiences help children to learn certain concepts. Park (1990) taught science concepts entirely in extra PE classes. The comparison students were taught the science lessons in a traditional classroom setting and did not receive any extra physical activity. The active experimental students learned the science concepts as well as the comparison group. In another study math concepts were integrated into two extra PE classes a week for the entire school year (Werner, Simmons, & Bowling, 1989). These authors found the participants improved their math knowledge by nearly 10 points on the Basic Skills Assessment of Performance Test (BSAP). Werner et al. have successfully integrated language arts and social studies

into PE instruction and have not hindered the quality of the movement program or the academic learning. These two studies support the belief that academic subject matter can be integrated into PE instruction with no detrimental effect on their academic learning. They also support the notion that the total time students engage in physical activity at school can be increased without jeopardizing academic learning. By increasing the PE/physical activity of the students these educators have maintained AA and have possibly provided a positive health benefit for their students.

It also appears that the type of physical activity (PE instructional vs free play) may influence AA in selected subjects. Ismail and Gruber (1967) conducted a one year study with children in which the experimental group received 30 minutes of PE instruction two to five days a week with structured and sequenced activities stressing coordination, balance and rhythm. The comparison group received only supervised free play at recess and no PE instruction. Analysis of the children's scores on the Stanford Achievement Test at the end of the year revealed that the children in the experimental group were three to five months ahead of the comparison group in both reading and arithmetic. This study points out the importance of the PE program being structured if it is to influence AA.

Siedentop and Siedentop (1985) found further evidence that increased PE does not hinder AA. They examined the relationship between QDPE with fitness and academic outcomes from the Hindmarsh study conducted in Australia. In the Hindmarsh study, the students received six hours a week of daily PE instruction. Each day combined a fifteen-minute fitness activity break, with a 30 - 45 minute lesson focusing on skill development. By comparing the results from this study and interviewing physical

education officials in Australia, the researchers concluded that QDPE programs produced measurable improvements in fitness and social development with no adverse effects on student academic performance.

Dwyer et al. (1996) examined whether increased instructional PE had a causal positive relationship with AA using a randomized intervention study. The SHAPE (School Health Academic Performance and Exercise) study involved an experimental 14 week intervention within the school setting with fifth grade students. Three classes in each of seven schools were randomly assigned to one of three groups: fitness, skills, or the control group. The control group continued their regular PE class instruction of three 30-minute classes per week focusing on improving student skill and competence in games. There was no emphasis placed on the intensity of the children's play or the incorporation of prolonged aerobic activity. The teaching objectives for the skills group were also focused on improving student skill and competence in games, however, instruction was increased from three times a week to daily and class duration was increased from 30 to 75 minutes a day. The 75 minutes were broken into a 60-minute block during the day for class instruction and a 15-minute fitness session each morning. The fitness group received the same duration, frequency and teaching objectives as the skills group. However, the teachers were instructed to increase the overall intensity of the game activities. The goal was to raise the heart rate of the students. Pre- and post-test measures were conducted for physical health (body mass and skinfolds), psycho-social functioning (classroom behavior) and academic performance (standardized arithmetic and reading tests). Results indicated no significant difference between the three groups for improvement in academic performance. It was concluded that AA was

not compromised by the increased time in PE. Researchers stated "there is sufficiently strong evidence to the possible effects of physical activity on scholastic rating to suggest that this association deserves more attention" (Dwyer et al., pS31). Once again students received the benefits of increased physical activity and their AA did not suffer. Perhaps an intervention of 14 weeks is insufficient to impact significant increases in AA.

Few studies have examined the relationship of PE and AA over extended periods of time. The Vanves study took place in the school district of Vanves in Paris, France for a period of nine years (cited in: Fishburne, 1985; Keller, 1982; MacKenzie, 1980; Sallis et al., 1999; Shephard, Volle, Lavallee, LaBarre, Jequier, & Rajic, 1982). Physicians and educators collaborated to set up a timetable that they believed was representative of the learning styles and the physical and emotional needs of children. The time for PE instruction was increased from two to eight hours per week while academic time was reduced from 23.5 to 15 hours per week for the experimental group (MacKenzie). Total school time per week was lengthened from 32 to 41.5 hours per week (Shephard, 1997). Comparisons between the experimental group and several control groups were made on intellectual, physical, cultural and social measures. These comparisons revealed that the experimental group was superior to the control groups in health, fitness, discipline and attitude. Children in the experimental group also matured more quickly, were more independent and were less susceptible to stress. Despite the decrease in academic class time the experimental group covered the same curriculum as the control groups and were found to be superior in academic performance (as cited in: Fishburne; Keller; MacKenzie; Sallis et al; Shephard et al; and Shephard).

The weaknesses of the Vanves study have been noted. The quasi-experimental

design (non-equivalent control groups) used groups that could not be randomly formed without disruptions to intact classes. However, the researcher tried to minimize the impact by pairing each experimental class with a control class. Unfortunately, it is unclear what criteria was used to match the control groups to the experimental groups (Shephard, 1997). Also, other factors such as daily naps may have attributed to the results (Sallis et al., 1999). Despite these weaknesses, acceptance of these findings by the French public and government was seen in the widespread implementation of the Vanves model into that nation's schools (MacKenzie, 1980) indicating strong support for the positive relationship of increased PE and AA.

Another long-term study was conducted by Shephard et al. (1982) over a six-year period with elementary age students in urban and rural schools around Trois Rivieres, Quebec. The control group participated in PE twice a week for 40 minutes conducted by their classroom teacher. The experimental group received one hour of PE instruction a day provided by a qualified PE specialist. Whole classes were designated to the experimental and control groups. The control groups were the immediately preceding and succeeding classes of the experimental group. This was done to ensure the two groups received the same teacher for academic instruction in succeeding years. That is, each teacher taught the control group one year and the following year they taught the experimental group (or vice versa). This was an attempt to minimize the possible halo effect of inflating the grades of the experimental group. AA was recorded from the students' report cards using the scores assessed by the teachers. Students were evaluated in the following areas: a) the student's ability to listen, to talk, to read and to write, b) mathematics, c) natural sciences, d) behavior and e) English (in the upper grades). In

addition to these areas of evaluation the grade six students' performance on the provincial achievement exams were used to measure AA. All students were also measured on the WISC and Goodenough test. Results indicated the experimental group performed significantly better than the control group in academic standing in every grade except one and four (Shephard et al; Shephard, 1996). Also the sixth graders from the experimental group showed enhanced mathematical ability and no difference in French language skill on the provincial achievement exams. The authors concluded that a substantial amount of time could be reallocated to PE without jeopardizing the academic learning of elementary children. In fact, increased time in PE may enhance the learning of mathematics (Shephard et al.).

Upon reexamining the Trois Rivieres study, Shephard (1996) offered these possible explanations. Increased arousal and relief of boredom in the experimental students may have put them in a mood or frame of mind that was more conducive to learning. Shephard states the "rate of academic learning per unit of class time is enhanced in physically active students" (p. 35). He further suggests enhanced self-esteem and/or enhanced body image from the increased physical activity may have lead to a greater desire to learn. He feels the argument that PE takes valuable time away from other subjects is not a valid argument to avoid daily instruction in PE. He supports the implementation of quality daily PE at the elementary school level.

Another study involved an experimental group receiving one hour of PE daily and a control group continuing with the usual curriculum (more time on academic instruction) in primary schools in South Australia (Dwyer, Coonan, Leitch, Hetzel & Baghurst as cited in: Sallis et al., 1999; Shephard, 1997). It was reported that the experimental group

showed several improvements in physiological and fitness variables but no difference in AA. A follow up study two years later reported favorable trends in arithmetic and reading grades as well as positive ratings of classroom behavior of the experimental group.

Project SPARK (Sports, Play, and Active Recreation for Kids) by Sallis et al. (1999) found similar results to the South Australia researchers. The experimental group received extra PE instruction (double the control group) from a PE specialist or a trained classroom teacher in the SPARK curriculum. The experimental group in a health-related PE program showed favorable AA over the control group. An analysis of the pre-test (grade two) and post-test (grade five) scores on the Metropolitan Achievement Test showed the experimental group decreased less than the control group. However, Sallis et al. concluded that students of a PE specialist were more active, physically fit and may have been better learners.

To date, research findings provide support indicating that the PE instruction during school hours does not hinder AA of students and may enhance the learning of some academic subjects. However, there are only a few studies that compare students from QDPE programs with students in non-QDPE programs. Additional research is needed to compare the impact of QDPE and non-QDPE programs on the academic learning of students.

School Physical Education and Leisure Time Activity

School instructional PE has been shown to positively impact AA but do students adopt an active lifestyle if they experience a QDPE program? Educating children to adopt an active lifestyle is a mandated goal of Alberta Education (1993; 1998). An

objective of QDPE programs is the expectation that children will be active during their leisure time. Little research has examined whether students in a QDPE program are more active in their leisure time compared to their peers in non-QDPE programs.

PE classes in school may be the only physical activity in which some children engage (Riddoch, et al., 1991). The Surgeon General's report (U. S. Department of Health and Human Services, 1996) states one-forth of the young people (ages 12 to 21 years) report no vigorous physical activity in their lifestyle. Both Blair et al. (1992) and DiNubile (1993) clearly state there is a need for an intervention to promote active living. DiNubile believes health habits learned in elementary school will influence how individuals behave throughout life. Haywood (1991) states health related elementary PE is the starting place for developing adults with an active lifestyle. Shephard (1997) verifies these statements. He examined the physical activity involvement of his experimental subjects from the Trois Rivieres study 20 years earlier. He found that as adults they are much more active than an age-matched sample from the general population.

Although research in QDPE programs linking to LTA is sparse, there is some evidence showing the importance of adopting an active lifestyle during childhood. A study by Engstrom (1986) examined sport activities of 15 year olds for a period of fifteen years and found that the early sport experiences provided psychological readiness to participate in physical activity later in life. Another study examined the extent that enrollment in optional PE predicted an active lifestyle (Eastman, Hostetter, & Carroll, 1992). It was found that males were more active than females and rural students tended to be more active than urban. However results suggest that optional PE did not

necessarily encourage participation in LTA. A report on British school children suggests that even though an emphasis has been placed on the promotion of active lifestyles over the last ten years, children still exhibit low levels of habitual health related physical activity (Armstrong & Biddle, 1990).

It is unclear at this time the extent that school PE programs influence LTA of children during their childhood years or into the adult years. The emerging evidence suggests the possibility that quality PE programs may have a positive impact on LTA. Certainly, the current focus of several PE curricular documents indicates the aim that QDPE be linked to LTA (e.g., Alberta Education 1998). Also, the current recommendations for physical activity for children endorse the teachings of positive approaches to lifetime activities through the school PE program (Corbin & Pangrazi, 1998). More investigations into the relationship between school PE programs and LTA are needed.

Perceived Competence and Academic Achievement

A factor that may influence student AA is perceived competence (PC). PC is the personal belief or sense a person possesses when evaluating their ability to master a task in a specific domain. Perceptions of competence will encourage effort, persistence and high levels of achievement and positive affect (Weiss, Ebbeck, & Horn, 1997). A higher level of PC has been found to be related to several positive qualities possessed by successful students. These positive qualities include intrinsic motivation (Harter, 1978, 1981, 1992; Vallerand & Reid, 1984), mastery goal orientation (Dweck, 1986; Elliot & Dweck, 1988), persistence at learning a task (Dweck; Dweck & Leggett, 1988; Feltz & Petlichkoff, 1983; Harter, 1978; Roberts, 1992) and seeking an environment to

demonstrate these talents (Roberts). Thus PC is linked to the level of personal motivation to engage in behaviors that could influence AA.

Competency motivation theory was selected as the theoretical framework for this study. This theory was developed to help understand children's self-perceptions and motivation. Competency motivation theory postulates that humans have an innate need to deal effectively or competently with their environment (Harter, 1985). This need is intrinsically motivated and produces inherent pleasure in the individual. In contrast, cognitive evaluation theory postulates that intrinsic motivation depends on perceptions of competence (Deci & Ryan, 1985, 1995). Throughout the literature on PC, the common stance is that PC, self-esteem and motivation are inter-linked.

In competency motivation theory, Harter (1985) views self-concept as a multidimensional construct and identifies five domains: scholastic competence, social acceptance, athletic competence, physical appearance, and behavior conduct. In addition Harter distinguishes a sixth domain called global self worth which is an all-encompassing (global) judgment of ones worth as a person. According to competency motivation theory individuals are motivated to make mastery attempts in a specific domain. The individual judges their attempts at mastery as either successful or unsuccessful using both internal (self-referenced) and external (norm-referenced) forms of evaluation. Following the evaluation the individual then makes a judgment of his/her level of competence in that domain. The decision to continue making attempts to master the task is motivated by the degree of the individual's positive sense of perceived competence, positive sense of self worth and positive affect. If the individual feels an elevated level in any of these areas, the positive feelings will be manifested in the individual as elevated level of

intrinsic motivation to make more mastery attempts.

The research based on Harter's work has indicated that the development of specific competence perceptions promotes mastery goal orientation and global self-esteem. School PE programs are also believed to hold potential for developing self-esteem in children (Whitehead & Corbin, 1997). A mastery goal orientation could be a factor positively influencing AA as well as improving physical performance.

Mastery goal orientation describes individuals who seek to increase their ability or master tasks (i.e. increase competence) in an achievement situation (Elliot & Dweck, 1988). Performance goal orientation describes individuals that are trying to avoid poor judgments by proving, documenting or validating their ability to others (Elliot & Dweck). This type of individual will often choose less challenging tasks to ensure success and approval. Mastery goal oriented students enjoy exerting effort to learn a task and will persist longer at the task to master it (Dweck; Fox, 1994). Solmon and Boone (1993) found that students with a mastery goal orientation in PE classes "tend to employ cognitive processes that foster learning" (p. 422). In addition these students were found to use self-referent criteria to measure their success and when given a choice these students would select more challenging tasks to learn motor skills. Hence, the literature strongly supports the need for QDPE programs to help children focus on a mastery goal orientation.

The type of PE program may impact PC by structuring age appropriate activities that allow children to experience success and positive affect. Several factors influencing the strength of the motivational orientation of children have been investigated including affect (Harter, 1981), PC (Williams & Gill, 1995) and successful experiences (Fox, 1994;

Harter, 1978). Since there is a link between PC and decisions to make mastery attempts in achievement settings, researchers have examined the influence of achievement motivation in physical settings. In general, a person who has a mastery goal orientation along with high PC will exert greater effort in physical activity (Williams & Gill). Conversely a person with an performance goal orientation did not exert much effort at the task. A QDPE program is expected to cover a wide range of movement activities cognizant of child growth and development and recognize the complex interaction of the cognitive, affective and psychomotor domains. Students in this type of PE program should therefore experience success, positive self-worth and positive affect (Gallahue, 1996) and be encouraged to persist in mastery attempts.

Feltz and Petlichkoff (1983) feel there is a direct link between a student's PC (domain specific) for their ability to perform a task and the actual performance of that task. They found if a student had high PC for a task that student would persist longer learning to master the task. They also found the converse to be true; students with low PC would not persist to master the task. Dweck and Leggett (1988) found school children that perceived their ability to be "high" selected challenging tasks over the easier tasks. They also noted that if these "high" perceived ability subjects possessed a mastery goal orientation they persisted longer at the challenge. This line of research suggests that PC influences factors relating to learning (e.g., persistence). PC may not only influence motor learning opportunities, it may also influence other tasks and perhaps AA.

Movement experiences play a role in a child's view of themselves. Being good at physical activity is seen as contributing to the development of ones overall positive self-concept (Gallahue, 1996). PC is considered to be a component of self-concept. Because

movement activities play an important role in a child's total development, there is the potential for school PE programs to influence cognitive learning as well as motor and affective aspects of development (Gallahue). Teachers have used movement experiences to teach a variety of academic skills and concepts because they realize children learn through a variety of modes and being actively involved in the learning (Kirchner & Fishburne, 1998). Learning in one area can be enhanced by learning in another area (Humphrey, 1990). Thus, physical activity experiences may influence AA as well as motor performance and LTA.

According to Harter (1982) children acquire a measure of their PC in a specific domain from test scores, peer comparison, self referenced methods, improvement of skill level, the amount of effort required and feedback from significant others such as parents, teachers or peers. McKiddle and Maynard (1997) state that any information from past or recent assessments of performance can be used to evaluate perceived competence. Children begin to develop their PC as young as four years of age. Whitehead and Corbin (1997) state that children age four to seven are able to make judgments of their cognitive competence, physical competence, social acceptance and behavioral conduct. However, they have difficulty distinguishing between physical and cognitive competence and between social acceptance and behavioral conduct. Harter (1982) believes that children during late childhood to early adolescence can distinguish all the domains of PC. Accuracy of PC increases with age and Harter (1982) states that at around age 12 children's perceptions of their competence begins to be more accurate and realistic. McKiddle and Maynard (1997) found that children over the age of 10 showed a greater dependency on the use of peer comparison and evaluation. Younger children showed a

greater dependence on the use of evaluative feedback from important adults. Weiss et al. (1997) found that children 10 to 13 depended almost exclusively upon social comparison and evaluation for judging physical competence. According to the literature children aged 10 to 12 years will have begun to formulate a judgment of their PC in specific domains. For the purposes of this study children within this range will be used as participants.

An individual with high PC is likely to possess a mastery goal orientation (Harter, 1992; Vallerand & Reid 1984). However, as most children progress through the school system they become more extrinsically oriented (Harter). This may be because as grade level increases education becomes less personal, more evaluative, more competitive and the product (grades) becomes more important than the process. Also, there is increased social comparison and standardized test scores are made public (Harter). Yet despite these pressures, some high scholastic PC students do not change from mastery to performance goal orientation. Perhaps physical education teachers can effect PC levels to help students maintain a mastery goal orientation throughout their schooling and instill a desire to learn for pleasure and become lifelong learners.

Perceived Competence and Leisure Time Activity

Several positive qualities accompany a high level of PC that might influence LTA. Individuals with high PC tend to show some or all of the following positive qualities: 1. intrinsic motivation orientation (Harter, 1978, 1981, 1992; Vallerand & Reid, 1984), 2. mastery goal orientation (Dweck, 1986; Elliot & Dweck, 1988), 3. persistence at learning a task (Dweck; Dweck & Leggett, 1988; Feltz & Petlichkoff, 1983; Harter, 1978; Roberts, 1992), 4. seeking an environment to demonstrate these

talents (Roberts), 5. exerting more effort, and 6. experiencing more positive affect from the activity (Weiss et al., 1997). Thus PC may be linked to the level of intrinsic motivation to engage in behaviors that could influence a person's level of involvement in LTA.

PC may also affect a child's involvement in LTA. If a child feels able to perform they may tend to engage in physical activity more frequently than if they do not feel competent to do activity. Feltz and Petlichkoff, (1983) found that participants in school sponsored sports possessed higher PC than non-participants. Klint and Weiss (1987) found that gymnasts with high PC participated in the sport for personal skill development and the main reasons for athletes dropping out were not having their skills improve and/or not being as good as they wanted to be in the sport. Roberts, Kleiber and Duda (1981) found that perceived athletic competence (PAC) has an important relationship with children's participation in sports. Children with high PAC are more likely to participate in organized sport than children with low PAC. Individuals with high PAC seek out and select environments to demonstrate their competence (Roberts, 1992). Ulrich (1987) did not find that PAC was significantly related to participation in organized sports. However, she did find that children with better gross motor skills selected organized sports more than children with poor gross motor skills. Since it has been found that QDPE does develop better gross motor skills than non-QDPE programs (Marshall & Bouffard, 1994), it is reasonable to expect that children in those programs would also select to be involved in LTA more frequently than other students. It may be found that students in QDPE programs also have higher levels of PAC.

Fox (1994) found the strongest motivational factor for children with low PC to

participate in sports was their achievement orientation. It was found that children who had low PC but were intent on personal improvement (mastery) goals were more motivated to be involved in sport than were children with low PC who were intent on being better than others (performance goals). Fox found that both high mastery and performance goal oriented children were motivated to be involved in sport regardless of level of PC. However, children with high mastery plus low PC were more motivated to continue activity as compared with high performance goal plus low PC children. Thus, the child's PC is an important factor to consider when examining LTA.

A QDPE program focused on personal improvement (mastery) may encourage both low PC and high PC students to be physically active in LTA. These findings suggest that the PE learning environment can impact children to be more active by nurturing a mastery goal orientation in the students. The goal orientation a child possesses has been shown to affect how well children will deploy their existing skills and knowledge as well as acquire new skills and knowledge (Dweck, 1986). Given the evidence that links PC and sport involvement it is reasonable to expect that QDPE programs that focus on mastery goals should have a positive impact on children's involvement in physical active LTA

Fox (1994) found that the teaching environment had a powerful impact on how children view their success and competence. He emphasized that the teaching environment must use self-reference indicators of success. McKiddle and Maynard (1997), also believe physical educators should be encouraging self-referent criteria, such as improvement in mastering a task, as being more significant than social comparison or grade outcomes. Harter (1978) postulates that children will experience negative

consequences when they have inaccurate perceptions of their PC. When a child underestimates their PC, they will develop negative expectations in that domain, resulting in low outcomes and performance. Brustad (1993) states that PC has been found to be a powerful influence on persons' affect, providing enjoyment or anxiety. Brustad further states that PAC is an antecedent of children's self-esteem and motivation. Thus, low PAC and inaccurate perceptions of PAC could mean low achievement or performance or tendencies to not engage in physical activity.

Summary

From the review of literature these factors are known. A QDPE program could help combat the present health problems such as CVD and obesity in Canada by providing regular and frequent physical activity. In addition to these positive impacts, a QDPE program could increase the level of physical activity undertaken by students. The literature strongly supports the belief that increased time spent in PE does not hinder AA. Increased PE/physical activity produces students who are more fit, more relaxed, better behaved, and as a result are better learners. This research will examine if QDPE programs have positive relationship with AA.

In addition to impacting present fitness levels, a QDPE program could promote an active lifestyle. Physical educators want to motivate children to be more active in their leisure. Some PE programs have been shown to increase level of LTA (Hunt, 1995; Shephard, 1997). This study will attempt to measure if QDPE programs do impact student LTA.

A QDPE program could also improve actual skill competence and PC and as a result have a positive impact on self-concept. Research is needed to determine if QDPE

has a positive influence on PAC and PSC. Competency motivation theory postulates that humans have an innate need to deal effectively with their environment (Harter, 1985). Perceptions of competence will encourage effort, persistence, positive affect and high levels of achievement (Weiss et al., 1997). This study will examine if the type of PE program has an impact on levels of student PSC and if PSC influences AA.

The literature is consistent suggesting that physically active individuals possess a high level of PAC (Feltz & Petlichkoff, 1983; Roberts et al., 1981). Harter (1981) contends that individuals who believe their competence to be high in a specific domain (such as sports) will pursue activities that let them develop that competency or display it. High levels of perceived competency is important in maintaining sports involvement. One of the purposes of this study will be to examine if the type of PE program influences PAC and if PAC influences LTA.

CHAPTER THREE

Methods

The review of literature revealed that increased physical activity (PA) in the form of extra physical education instruction (PE) time may positively influence academic achievement (AA), perceived competence (PC) and leisure time activity (LTA). The literature supported the conviction that increased PE time in school, at the expense of academic time, did not hinder AA and it may have enhanced math achievement. The increased PA may positively impact the level of a child's PC. Higher levels of PC have been shown to positively influence student qualities such as effort, persistence, affect, goal orientation (mastery) and motivation orientation (intrinsic) of children which in turn may positively influence AA and LTA. Also, levels of perceived athletic competence (PAC) may influence physical activity involvement. Studies show support for the statement that active children are active adults. This chapter will explain the methods employed to determine if there is a significant difference between two types of PE programs (QDPE and non-QDPE) and AA, PAC, PSC and LTA. Also, the methods used to examine whether there are relationships between PSC and AA, LTA and AA and lastly, PAC and LTA irrespective of type of PE program are explained.

This study compared two groups of grade five students, distinguished from one another by the type of PE program in place at their schools. A static group comparison was selected as the design of this study as intact classes of students were used. The participants in one group (QDPE) received daily PE instruction conducted by a physical education specialist. A physical education specialist was defined for the purposes of this study as teacher possessing a bachelor of physical education. A generalist was defined as

a teacher with a bachelor of education. Participants in the other group (non-QDPE) received PE instruction from their generalist classroom teacher four times a week. Four school programs (two QDPE and two non-QDPE) were used without an intervention. The four schools exhibited the desired differences in physical education program, yet were as similar as possible to one another in many other aspects of school life and free time opportunities for recreation. The teachers were asked to continue their present style of instruction and current unit and lesson plans for their PE classes during the study. Using a static group comparison minimized the number of interruptions to present school programs for the participants, non-participants and the other members of the school community (teachers, administration volunteers and students in other grades).

Criticism of this design stem from the recognition that any difference(s) found between the two groups may not be fully attributed to differences in the independent variable. In this study, the independent variable was the type of PE program. Pairs of schools in the same community were recruited to take part in this study for two reasons. First, it was important to emphasize the similarities that existed between the schools in all other aspects of school life except the PE program. Secondly, it was felt that the validity of the outcomes would be stronger if a difference was found in students according to the type of PE program. Different outcomes found in one of the two schools in the same community is more likely to be attributed to something unique. If the pair of schools were in separate communities any differences in outcomes would more likely be attributed to differences in the two community settings. In all, two pairs of schools were recruited and each pair was in the same community.

The four schools were selected as two pairs. In each pair, one school was selected

for its QDPE program, the second school then was selected because it was in the same community, but offered a non-QDPE program. Both QDPE schools had a long history of support for the QDPE program. Each QDPE school had a physical education specialist responsible for the PE instruction of all the grade five students. Generalist teachers were responsible for PE instruction in the non-QDPE schools.

It was assumed that students in adjacent schools in the same community would have the same opportunity to enjoy similar leisure activities outside of school hours. This was based upon two premises. First, both groups were close to the same recreational programs and facilities. In addition to the fields adjacent to each school, which contained at least one soccer field, the students from each pair of schools had similar access to tennis courts, playgrounds, baseball and softball diamonds, other soccer fields and an ice arena. All four schools had parkland in the immediate area beside the school or a short walk away. Secondly, it was generalized that students from adjacent schools would come from homes of similar socioeconomic status. It was assumed that most of the families in the same community would have similar disposable income to pay for recreation. Another assumption was that parents in the same community would hold a similar value concerning the importance of their children participating in physical leisure activities.

Physical Education Class Observation

The two types of PE programs used in this study are identified as QDPE and non-QDPE. It was assumed that the QDPE program was a "quality" program in part because it was taught by a PE specialist, and in part because it was offered to students on a daily basis. One could ask the question, "Is the teaching of a QDPE program really any different from the teaching of a non-QDPE program?" Although the purpose of this

study was not to assess the teaching done by the PE specialist teacher in the QDPE program and compare it to the teaching done by the generalist teachers in the non-QDPE program, the results of this study may in fact be influenced by factors related to effective teaching. The intent of observing the physical education classes was to assess selected aspects of the PE programs that relate to the quality of the PE programs and establish that the two programs were indeed different. It was important to be able to describe the lesson environment and student involvement. Rink (1996) states an effective teacher creates an environment for learning by employing good communication, providing appropriate feedback, structuring good content development, maximizing the amount of practice time for students and by having students engage in good practice. Gage (as cited in Rink, 1996) states effective teaching leads to more "intended" learning than does less effective teaching. Hence, in an attempt to determine whether the teaching/learning environment was indeed different in the two programs observations of two lessons were conducted in each program.

The researcher used systematic observation techniques to collect data related to effective teaching in physical education. With one instrument the researcher focuses on structure of the lesson by the teacher. With the second instrument the researcher focuses on the behavior of randomly selected students in response to the instructions of the teacher. It was anticipated that the use of systematic observation by the researcher would provide information on specific behaviors rather than use of anecdotal notes that simply record what happened in the lesson. A set of teaching variables related to what effective teachers do has evolved from research and it has been shown that these variables seem to discriminate effective teaching across content and settings (Rink, 1996). Rink (p173)

identifies the following principles PE teachers should practice, described in terms of:

1. identifying intended outcomes for learning;
2. planning learning experiences to accomplish those outcomes;
3. presenting tasks to learners;
4. organizing and managing the learning environment;
5. monitoring the learning environment;
6. developing the content; and
7. evaluating the effectiveness of the instruction/curricular process.

The researcher attempted to observe two PE classes of all three generalist teachers who taught PE and the other PE specialist. However, circumstances existed at the time of the study that prevented some observations. First, observations of all five generalist teachers were not necessary as not all of them taught PE. In one of the non-QDPE schools two of the generalists traded their PE instruction responsibility to the third grade five teacher who then taught all three grade five classrooms PE. That teacher was a participant in the study and two of his PE classes were observed. In the second non-QDPE school one generalist teacher requested not to be observed and that request was honored. The second class was participating in a swimming program during the time of this study. As a result, that generalist teacher did not have PE teaching responsibilities at that time and was therefore not observed. As a result only one generalist teacher was observed teaching PE. In the two QDPE schools both PE specialists were observed. The researcher observed two PE classes conducted by the PE specialist. Since the researcher was the other participating PE specialist, two participating teachers observed two of his classes.

Teachers were observed as they taught two classes. The researcher made it clear to the teachers that the lessons to be observed were to be typical of their teaching style and part of their existing unit and year plans. The teachers were notified the day before the observations were to take place to communicate the time and the general content of the lesson. This pre-lesson communication ensured that the class observed was a "typical" teaching class. The researcher did not want to observe a class that had been scheduled for student evaluation or a "special lesson" for the researcher.

One observation specifically focused on the behaviors of the teacher during the lesson. The researcher used the Qualitative Dimensions of Lesson Introduction, Task Presentation, and Lesson Closure, QDITC, (see Appendix A) instrument to quantify qualitative aspects of teaching for complete lessons (Byra, 1992). The QDITC provides a record of observations regarding the presence or absence of specific components of the introduction, task presentations and closure of the lesson. Some specific components are graded as present (all students engaged), partial (some students engaged), or absent (few students engaged). Other components are scored according to whether the component was present or absent.

Under the introduction section of the QDITC information is recorded concerning starting point, stated lesson purpose, safety, and warm-up (sub-categories). The task presentation section is broken down into pre-task, task, and post-task dimensions. Pre-task sub-categories included teacher position, learner attention and arrangement of task environment. For the task presentation the observer examines the teacher's presentation for clarity, the presence of a demonstration, the number of task cues, the accuracy of task cues and qualitative task cues. For the post task presentation the observer assesses the

teacher for response appropriateness, learner organization, teacher congruent feedback and motivational objective. Lesson closure is assessed for closing point, review of motor behavior, review of social behavior, equipment collected and presence of a checklist. The QDITC provided an indication of how effectively the teacher structures the lesson.

The observations were summarized in the following way. First, the frequencies of present, partial and absent assessment scores were converted to percentage scores. Secondly, only the desirable outcome percentages (i.e. present) were recorded at the bottom of the chart. Then an average percentage was calculated for the twelve desirable outcomes. This average percentage was called the overall percentage score for task presentation. The same procedure was repeated for the categories of lesson introduction and lesson closure. These two final averages were recorded in the last frequency table on the QDITC chart entitled overall percentage scores. In this study these two percentages were used to differentiate the two types of PE programs.

A second class observation focused on student behavior. Rink (1996) states that if students are to learn motor skills the teacher must select an appropriate task, manage the class time so the students have sufficient time to practice, motivate students to engage at a high level and design the task so the students experience success. The quality of instruction can be observed in the behavior and the level of student involvement in the lesson.

The second observation tool used was the Duration Recording Time Line (see Appendix B). With the Duration Recording Time Line, the observer records the involvement of randomly selected students for periods of five minutes throughout the lesson. The observer uses a stopwatch and a time-line to record what and when a target

student is engaged in selected behaviors (i.e. waiting, getting ready, appropriate motor engaged, off task). Every 15 seconds the behavior of the designated student is coded and recorded on the time line. The amount of time that students spent in selected behaviors is converted to a percentage of the total class time. Duration recording has resulted in valid and reliable data (Rink, 1985). It was relatively easy to use duration recording and it provided a picture of student behavior to help assess the quality of the PE instruction and differentiate the two PE programs.

The results of these observations were used in a descriptive summary of the teaching/learning environment for the two types of PE programs (see Chapter Four). There was the possibility that a generalist teacher would provide highly effective instruction in physical education to their classes. There was also the possibility that a PE specialist was not providing a highly effective learning environment. This would be in conflict with one of the assumptions of this study. By collecting some descriptive data through the use of systematic observation techniques the researcher was able to determine how similar or different the two types of PE program were in relation to known variables for effective teaching of physical education.

Observation notes were made available to the participating teachers upon request. The researcher recognizes the value of feedback to teachers for personal reflection on their teaching practice.

Subjects

Sample Size

The sample size was calculated by using the guideline of ten subjects per dependent variable. Since this study involved six dependent variables, 60 subjects were

desired from each type of program, for a total of 120 subjects. The sampling for this study was a sample of convenience through the use of intact classes.

All 275 grade five students in four schools from the Calgary Board of Education (CBE) were given the opportunity to volunteer for this study. Initially, the researcher only contacted two large adjacent elementary schools. The first non-QDPE school had a total population of 403 students (K - 6). Informed consent was received from 13 (22%) of the 58 grade five students. The first QDPE school had 550 students (K – 6). Informed consent was received from 32 (42%) of the 73 grade five students. Unfortunately, only 45 (34 %) of the total 131 grade five students volunteered for the study creating a need to find a second pair of schools. A second pair was secured the following school year. The second non-QDPE school had a total population of 505 students (K-6). Informed consent was received from 38 (56%) grade five students. The second QDPE school had a total population of 560 students (K – 6). Informed consent was received from 28 (37%) grade five students. From the second pair of schools an additional 66 participants volunteered for the study making the total number of participants 111 (40 % of all 275 grade five students in the four schools).

Procedures for Soliciting Subjects

The role and assistance of the professional staff in the participating schools was essential to carry out this study. Therefore, the steps to securing student participants began with securing the participation of the professional staff in the four schools.

First, ethics approval was received from both the University of Alberta and the CBE. Then, an interview with the principals of each school was arranged at a mutually convenient time. During the interview the principals were officially informed of the

nature and purpose of the study. All the questionnaires were explained and the principals received a copy of each. At this time the researcher solicited their support and permission to approach the grade five classroom teachers, the students in the grade five classes, the parents of these students and the physical education specialist (in the QDPE schools) to request their participation in this study. A time was set to meet with the grade five teachers.

In the first pair of schools a total of seven teachers (six generalists and one PE specialist) accepted the invitation to participate in the study. In the second pair of schools seven generalist teachers volunteered, along with the researcher. The researcher was the physical education specialist for the QDPE school.

During the meeting with the teachers an overview of the nature and purpose of the study was presented. Each teacher was provided with a consent letter outlining his or her precise involvement in the study. Their role in the study and details of how to administer the instruments (questionnaires) were provided at this time. All the teachers agreed to volunteer and signed the consent form at the end of the meeting. See Appendix C for Teacher Consent Letter and Form. The researcher stressed that their participation was voluntary and that they could withdraw from the study at any time. It was emphasized to the teachers that only the researcher would have knowledge of their identity and access to the raw data. Anonymity and confidentiality has been strictly maintained. The researcher then arranged a mutually convenient time to talk to the students in their classes and solicit their participation in the study.

All the students in grade five in all four schools were invited to volunteer to be participants in the study. During the meeting with the students the researcher presented

an overview of the nature and purpose of the study. The students were shown an overhead of all the instruments and provided with an explanation of their personal role in and commitment to the study. The parental consent letters and forms were then distributed and explained. The students were asked to take the letter outlining the nature of the study and the permission form home for their parents to read and sign. See Appendix D for Parental Consent Letter and Form. The researcher stressed that their participation was voluntary and that they could withdraw from the study at any time. The researcher emphasized that everyone was welcome to participate in the study, it was not just for students who liked PE. Every child accepted the invitation to volunteer and took a permission letter home. A total of 111 students volunteered to participate in the study and returned signed informed consent forms. It was emphasized to the participants that only the researcher would have knowledge of their identity and access to the raw data. Anonymity and confidentiality has been strictly maintained. It was also stressed that all the students, both participants and non-participants, would continue to participate in their PE program that would not change for the study.

Students who volunteered, and had been granted permission to participate by their parents, were given an identification number that was used for all questionnaires and data collection forms. Only the researcher had access to the student's names and ID numbers. Teachers and parents have not had access to the data. They were informed of the results in a written summary of the study given to the principal of each school.

An attempt was made to collect data from all 111 participants, however, student absences and student failure to return questionnaires did occur. Participants who were absent on the day that an instrument was being administered were asked to meet at a

mutually convenient time to complete the missed instrument(s). These participants were requested to complete the questionnaires after school or at noon to avoid any classroom disruption. Some participants however still missed and/or failed to return questionnaires sent home.

Instruments

The dependent variables included measures of perceived competence (PC), leisure time activity (LTA) and academic achievement (AA). Since the three measures involved quite different procedures, each instrument will be discussed along with procedures for data collection for each particular measure.

Perceived Competence

Perceived competence was measured using Harter's Self-Perception Profile for Children, SPC (Harter, 1985) entitled "What I Am Like". The SPC measures children's perceived competence (PC) in six areas called subscales: scholastic competence, social acceptance, athletic competence, physical appearance, behavior conduct and global self-worth. For the purposes of this study only two of the six subscales were used, namely, perceived athletic competence (PAC) and perceived scholastic competence (PSC). The questionnaire assesses each subscale using six polar sentences describing children. That is, the sentences were written in a positive form and a negative form. The child rates the positive or the negative form of the sentence as "really true for me" or "sort of true for me". Each question has four possible answers rated one to four. The lower rating of PC has a value of one and the higher rating of PC has a value of four. Each sub-scale was assessed independently. Each participant has two scores ranging from a possible score of 6 to 24.

The SPC has been found to be a reliable measure of PC with reliability coefficients from .71 to .86 for four different samples (Harter, 1985). The SPC is designed for use with children in grades three through six. Other researchers have used the SPC. Feltz & Petlichkoff (1983), Klint and Weiss (1987), and Ulrich (1987) all used the SPC in studies of youth sport involvement. Johnson (1994) used the SPC as a measure in a study involving a physical education intervention and its subsequent effect on cooperative learning in the classroom.

A criticism of the instrument relates to the social comparison that a child must perform in order to complete the SPC. The social comparison may distort the child's perception of their PC and make the child uncomfortable. This can occur if the child uses a reference group that is not a true peer group. Harter (1985) states that when "puzzling" results have been found in the data the researcher can determine through an interview with that child if an inappropriate reference group has been used by the child to evaluate themselves on the SPC. Special needs students have been found to compare themselves to non-special needs students, which resulted in a poor profile of themselves. These students should have compared themselves with similar peers to avoid a distorted profile. Although this caution was considered for this study, there appeared to be no need to question any of the participants in this manner.

The instrument requires the child to make judgments about themselves; therefore, care was taken to help students who may have found completing the questionnaire stressful. Students were reminded that they could stop at any time without consequence. A school staff member was present or available immediately for counseling, if students felt uncomfortable doing the questions on the SPC. In addition, if the researcher found

personal information on the questionnaire that might indicate the child was in trauma and had chosen to use this opportunity to make a "cry for help", he was to immediately notify the school administration. Personal information was not found on the questionnaires nor did any child show emotional difficulty or seek assistance as a result of completing the SPC.

Procedures for Administering SPC.

The SPC is a paper and pencil questionnaire. All of the participants completed the SPC in 15 minutes or less. Students participating in the study in the paired schools (QDPE and non-QDPE) completed the SPC on the same day. The researcher administered the SPC at a prearranged convenient time for the teacher(s). The participants were removed from their classrooms and wrote the SPC in a separate space away from the non-participants. The non-participants continued to participate in the current lesson with their teacher. All the questionnaires had the participant's ID number written on it in advance. The participant's name was on a post-it note that was removed by the researcher as participants received their SPC sheet. Only student ID numbers appeared on the questionnaires (see Appendix E). The researcher handed out and collected all of the questionnaires personally.

The SPC provides a practice polar sentence that the researcher used to coach all the participants on the procedure to complete the SPC. The sample sentence given is "Some kids are happy with the way they look" but "other kids are not happy with the way they look". The procedure to complete each question of the SPC first requires the child to read the two polar forms of the sentence-describing children. The participant next decides if the positive or the negative form of the sentence best describes them. Lastly,

the participant evaluates themselves in association with the child in the sample sentence using one of two qualifiers, "really true for me" or "sort of true for me". The researcher coached participants through the sample sentence on the SPC, stressing that they were to check the qualifier of the polar sentence that described the child most like them. To help the participants avoid using an inappropriate reference group the researcher gave an example using himself as the subject. The researcher explained that if he was to make a judgment of his field hockey skill he should compare himself to his teammates not the National team players. Every attempt was made to answer all the questions of the participants throughout the questionnaire regarding the correct manner that they were to read and qualify the polar sentences and reduce any anxiety a child might experience completing the SPC.

Leisure Time Activity

Two instruments were used to measure LTA. One measured the amount of activity completed in a seven-day period and the other measured the number of organized activities the participant had engaged in over the previous year. Measuring activity involvement on a weekly basis using the LTEQ-M and a yearly basis using the YR-LTA provided an overall picture of the activity levels of the participants.

To measure the leisure time activity levels of the participants for a seven-day period the researcher modified an existing inventory by Godin and Shephard (1985). Their inventory called the Leisure Time Exercise Questionnaire (LTEQ) details the frequency of strenuous, moderate and mild activity, performed for a minimum of 15 minutes, over a recent seven-day period. The frequency of each activity is then multiplied by a metabolic factor. Strenuous activity is multiplied by a factor of nine,

moderate activity is multiplied by a factor of five and mild activity is multiplied by a factor of three. The calculation of a total weekly activity score is the sum of the adjusted scores for each category of activity. Godin and Shephard found reliability coefficients for strenuous activity to be .94, for moderate activity .46, and for mild activity .48, with a total reliability coefficient of .74. The LTEQ requires each participant to recall an entire week of activity at one sitting. Other researchers have used the LTEQ. Mummery, Hudic, and van Ingen (1996) used the LTEQ for junior high age children. Sallis, Buono, Roby, Micale and Nelson (1993) used the LTEQ with grade five, eight, and eleven students. Sallis et al. found that the test retest reliability for the grade five students was .69, $p < .001$. In addition, the grade five students showed the strongest and most consistent correlation between the LTEQ and heart rate monitors over the students in the higher grades. The success of these researchers encouraged the use the LTEQ for this study.

Some criticisms of the format of the LTEQ have been expressed. Baranowski (1988) states that children have difficulty cognitively averaging a week's worth of this type of information. To improve the seven-day recall of activity of children, Baranowski suggests the instrument should be done daily to prevent memory decay. As well, a daily instrument would account for differences in activity patterns that occur on different days of the week. He further stated that cueing participant's memory to the time of day that the activity was performed would help children to remember more clearly the activities they have done.

For purposes of this study, the LTEQ was modified. See Appendix F for the LTEQ-M instrument. Baranowski's ideas were used to make the LTEQ more

manageable for elementary age children. First, a list of possible summer activities was adapted from Godin and Shephard (1985) and made into an alphabetical checklist. Second, the checklist was completed daily. Third, the children were not required to distinguish between strenuous, moderate or mild activity. Fourth, a chart (Appendix G) was displayed in both the gym and in their classrooms to cue the students and to remind them of the continuous activity for fifteen-minute time period requirement. They were cued by means of questions and time frames to help them remember the activities on the previous day. An example of one of the cues is "what did you play or do **before school**?" Fifth, to help the participants distinguish a 15 minute period on the (LTEQ-M) the researcher provided two examples of a15 minute block of time; recess, which is one 15 minute block and gym class, which is two 15 minute blocks.

The researcher completed a pilot study using the LTEQ-M with two classes of grade five students at a CBE school not participating in the study. The researcher explained how to complete the LTEQ-M and the classes finished the recollection of their weekend activities in 11 minutes. During the explanation of the LTEQ-M a student revealed one shortfall to the instructions. "If I play soccer do I check both running and soccer?" The researcher instructed them to only check soccer and stressed this procedure was to be followed for any other running type game. This incident was used to clarify the procedures for administering the LTEQ-M in the study.

The researcher administered the LTEQ-M on the first day and the volunteer teacher administered the instrument for the remaining five days. Under the volunteer teacher supervision it took seven minutes the next day and decreased to less than five minutes a day by the end of the five days. The volunteer teacher expressed that she had

no difficulty nor did the students have any difficulty following the procedures.

Names of the students were crossed out before the forms were returned to the researcher. In a debriefing session with the researcher the grade five students indicated that they understood the fifteen-minute time requirement and that they were to check off only the activities done during the previous day. Each student completed the LTEQ-M correctly in the pilot study.

Upon examining the completed LTEQ-M checklists from the pilot study, the researcher noted some of the activities had not been checked off. These were removed to simplify the LTEQ-M for the study. The number of activities was reduced to 21 from the original 31.

Procedures for Administering the LTEQ-M.

Each participant was given an LTEQ-M and instructed to write their name in the space provided. Their name was replaced with their ID number by the researcher at the end of the seven-day recall. To complete the LTEQ-M the children read down the list of activities and checked the activities they participated in the previous day (under the corresponding day of the week). If the activity was not listed, blanks were provided for the participant to add his/her unique activity. In this study the LTEQ-M was done on six consecutive school days. On the first Monday the children recalled their activity from the previous Saturday and Sunday with coaching from the researcher. On Tuesday through Friday they were to recall only the activities from the previous day. On the final day, the following Monday, the participants had to recall the previous Fridays' activity. The researcher felt the last Monday had reliable data for two reasons. First, the students were familiar with the routine of recalling their activity from the previous day. Secondly, the

day they had to recall was a school day, which has more structured time frames than Saturday or Sunday, such as recess, before, during and after school. These time frames helped cue the participants to recall their activity despite the weekend time off.

The researcher gave an explanation of the LTEQ-M and coached the participants on how to complete it on the first day. The explanation and completion of the LTEQ-M took 15 minutes. On each subsequent day, it took the participants five minutes to complete the LTEQ-M. The classroom teacher or PE specialist supervised the completion of the LTEQ-M for the remaining days of the recall. Each pair of schools completed the LTEQ-M for the same seven-day period. The researcher minimized the interruption of classroom routines by allowing the teachers to chose what time of the day they felt was best to administer the LTEQ-M. In all the schools the teachers independently chose to administer the LTEQ-M at the beginning of physical education class. Teachers used a file folder with the forms inside and placed it at the door of the gym. As participants entered the gym they collected their form, completed it, and returned it to the file folder as a part of their warm-up.

The second instrument used to measure LTA was an inventory of each participant's organized activity of the previous year. LTA was measured using a questionnaire called the Year Recall of Leisure Time Activity, YR-LTA (see Appendix H). The researcher developed the YR-LTA. The questionnaire asked the respondents to list all the organized activities in which they had participated in, outside of gym class and during the last 12 months. The participants were also asked to distinguish the activities that were sponsored by the school and those that were sponsored by the community. A sports club activity was defined as a sports group that had organized games and practices.

Lessons were any physical activities taken in the form of a class such as ballet lessons. School clubs were any activities participated in at the school that took place outside of instructional PE class (e.g., intramurals). A letter further explained how anonymity was to be maintained (see Appendix H) for students completing the form.

A pilot study of the YR-LTA was conducted in one class of grade five students in a CBE school neither in the study nor in the previous pilot study of the seven-day recall. Nine forms out of 24 (38 %) were returned. The parents were asked to give feedback regarding the format of the YR-LTA to the researcher to help make it "user friendly". All the parents stated the definitions and directions were clear. One respondent did not realize intramurals and house leagues were one in the same. The average time to complete the YR-LTA was seven minutes. The YR-LTA was not modified for the study as a result of the positive feedback.

Procedures for Administering the YR-LTA.

The researcher handed out the YR-LTA questionnaire and covering letter (Appendix H) to the participants following the completion of the SPC. This questionnaire was to be done in the home of the participant with the help of their parent or guardian. To assist the parents a letter explained the types of activities to be listed and a chart with memory cues was provided to record them. The participants were instructed on how to fill out the YR-LTA questionnaire. It was emphasized that the activities were to be physical activities. Using an overhead of the YR-LTA questionnaire, the researcher used his son as an example of some of the activities a child might be involved in and how to enter them on the questionnaire. Next, it was explained how their anonymity was to be maintained. The participant's name and their parent's signature was blacked out with a

felt pen and immediately replaced with their ID number. The researcher emphasized to the participants the purpose of their parent's signature was to safeguard the validity of the recalled leisure time activities. Lastly, the letter stated a date (the next day) indicating when the YR-LTA was to be returned to school.

Academic Achievement

Academic achievement was measured as a single mean score of the "academic" courses for a single term. The academic subjects were language arts, mathematics, science and social studies. Each subject area was evaluated in several categories; all of these scores were recorded and used in the calculation of the overall mean. Language arts was categorized as reading with five sub-categorizes, writing with seven sub-categorizes and listening/speaking with three sub-categorizes. Mathematics and science each have four sub-categories. Social studies had three sub-categories. The overall mean was calculated from 26 scores. For an example of a CBE elementary report card see Appendix I. The CBE elementary report card uses a number scale from one to five as achievement indicators. One is the highest score and five is the lowest. See Appendix I for a description of the achievement indicators. In addition, teachers can add their own categories, see Appendix K for an example of a completed report card with teacher added categories. For the purposes of this study, the teacher added categories were not included in the analysis. This was to standardize the data between schools and teachers.

Procedures for Data Collection of AA.

The researcher followed recommendations of a school administrator in developing the procedures for collecting information from report cards. Concern was expressed over the report cards leaving the school or being photocopied. Because report

cards have personal data, signatures and are considered a legal document, the school wanted assurances that no loss or unauthorized data collection would take place.

To honor these concerns a data collection sheet was designed (see Appendix J) to ease in the recording of the raw scores so the researcher could quickly copy the raw data in the classrooms of the teachers. Arrangements were made with each generalist teacher to meet in their classroom when no students would be present to record the AA. The teachers were asked if they wanted to be present when the researcher recorded the data. Most were present doing lesson preparation and expressed no inconvenience with the researcher's presence. No photocopies were made of report cards and no report cards left the classroom.

The researcher recorded only the term mark from March 1997 for the first pair of schools and the November 1997 term mark for the second pair of schools. The AA data collection sheet contained only ID numbers to ensure the anonymity of the participants' scores.

Data Analysis

In chapter four the researcher will examine the data using quantitative descriptive statistics. First, the results of the PE class observations will be examined to distinguish if indeed a difference does exist between the two PE programs (QDPE and non-QDPE).

Secondly, a comparison of means using a *t* test for independent samples will be used to investigate the first four of seven questions.

1. Is there a significant difference between the two types of PE programs and AA?
2. Is there a significant difference between the two types of PE programs and

PAC?

3. Is there a significant difference between the two types of PE programs and PSC?
4. Is there a significant difference between the two types of PE programs and LTA?

A Pearson moment correlation coefficient will be used to examine the remaining three questions.

5. What is the strength of the relationship between PSC and AA? ,
6. What is the strength of the relationship between LTA and AA?
7. What is the strength of the relationship between PAC and LTA?

CHAPTER FOUR

Results

The main purpose of this study was to investigate if a difference existed between two types of physical education programs (QDPE and non-QDPE; see Chapter One p. 14 for definitions) and four dependent variables. The four variables were student academic achievement (AA), perceived athletic competence (PAC), perceived scholastic competence (PSC) and leisure time activity (LTA). The first section of this chapter describes the observed differences of the two PE programs. The second section examines the strength of the relationship between each of the four dependent variables with the two types of PE programs. The third section evaluates the strength of the relationship between AA and two factors, AA and PSC and AA and LTA (irrespective of the type of PE program). The final section examines the strength of the relationship of PAC with LTA (irrespective of the type of PE program).

Observed Differences Between Non-QDPE and QDPE Programs

The intent of observing the physical education classes was to determine whether the PE programs were different according to selected criteria often used to examine effective teaching. It was not to assess the teaching done by the PE specialist teachers in the QDPE program and compare it to the teaching done by the generalist teachers in the non-QDPE program. The study was in part designed on the assumption that the two types of programs would differ such that the QDPE program would provide an enhanced learning environment. Therefore it was important to observe the teaching/learning environment created in the schools and gather some data through the use of observation techniques used in research on effective teaching in physical education. Anecdotal notes

and systematic observation of teacher and student behaviors were used to collect some information from observed classes conducted in the schools for both types of PE programs (refer to Chapter Three for description of observation instruments).

The comparison of the two types of PE programs was based on observations of two PE classes of the non-QDPE program, and four classes of the QDPE program. The researcher attempted to observe the teaching of the physical education classes in all four participating schools. However, PE classes were observed in only one of the two non-QDPE schools. This was because in the first non-QDPE school, one of the participating classes was taking swimming lessons at the time of the study and the other participating generalist teacher requested not to be observed. In the second non-QDPE school, the observed teacher was a generalist classroom teacher who taught PE to all three grade five classrooms. This was an arrangement made between the three grade five teachers. He expressed an interest in teaching PE; his university qualifications were the same as the other two grade five teachers. In the two QDPE schools the two observed teachers were PE specialists. Because the researcher was one of the teachers in the QDPE program, another participating teacher observed two of the researcher's classes. The researcher made it clear to the teachers that the lesson to be observed was to be typical of their teaching style and part of their existing unit and year plans. All participating schools were doing a games unit at the time of the study. The researcher was observed conducting two volleyball lessons. The volleyball classes observed focused upon skill instruction and practice with modified games utilizing the skills learned that day. The other participating teachers all conducted a dodgeball type game. The dodge ball lessons focused on participation and fun with the teacher presenting a reminder of rules and

strategy at the beginning of the class.

The data from the Duration Recording Time Line and QDITC observation instrument provided a picture of selected factors relating to the quality of the overall lesson. However, prudence should be exercised when using the data from these two instruments to compare the two programs. The two observed classes for each teacher only provide a snapshot of their program. For each observation day two lessons were observed. The QDITC was used during the first lesson and the duration recording timeline was used during the second lesson. The lesson content was the same for the two lessons taught by the same teacher.

The results of the QDITC are expressed as two overall percentage scores for introduction/closure and task presentation. The teacher strives to have a 100 percent score indicating all the quality components were present in their lesson. The average percentage scores of the components for the two programs were tabulated as follows: non-QDPE program lessons achieved 56% for introduction/closure and 47% for task presentation; the QDPE program lessons achieved 61% for introduction/closure and 69% for task presentation. The higher percentage scores for the QDPE lessons indicate that more of the desired quality teaching components were present in their lessons.

To complete the Duration Recording Time Line six random students were observed for five-minute intervals. Five specific student behaviors were distinguished and identified in the observations, namely, listening, management, appropriately engaged, waiting, or off-task. The total time for each type of behavior was converted to a percentage of the total class time. The average percentage scores for the behaviors of the students in the non-QDPE programs were 21% for listening, 8% for management, 52%

for appropriately engaged, 0% for waiting, and 19% for off-task. The average percentage scores for the behaviors of the students in the QDPE programs were 27% for listening, 6% for management, 49% for appropriately engaged, 2% for waiting, and 17% for off-task. The major difference appeared to be in the amount of time students spend listening in a class directed by a specialist in the QDPE program schools resulting in slightly reduced appropriately engaged time. The nature of the two types of lessons may have contributed to the higher time spent in listening behavior. A volleyball skill instruction lesson requires the dissemination of skill execution information. In a lesson in which the students play a game (dodge ball) that they have prior knowledge of the rules requires far less instruction in order for them to play.

The Relationship of Type of PE Program and Selected Variables

Type of PE Program and Student AA

This section examines whether the AA ratings of students in the non-QDPE program significantly differ from the students in the QDPE program. To investigate the size of the difference between the type of PE program and AA, a comparison of means as well as an examination of the frequency of AA scores was undertaken. For a description of how AA was measured see Chapter Three.

The report card used by the schools in this study utilizes a backwards scale of five to one to rank achievement (See Appendix I for an example of a report card and a description of the number scores). For data analysis of AA in this study, the researcher reversed the backward scale of five to one, to be scored one to five (See Appendix L for formula). An ascending scale of one to five with one representing low achievement and a five representing excellent achievement was easier to interpret and understand. For data

analysis of AA a total of 109 participants were used (non-QDPE = 49, QDPE = 60).

The mean for AA of the non-QDPE group was 3.17, (SD = 0.59) and for the QDPE group it was 3.35, (SD = 0.68). Six outliers were removed (non-QDPE = 48, QDPE = 55). An outlier is a score that lies outside the normal range of scores (Thomas & Nelson, 1990). In this study, a score more than two standard deviations from the mean was considered an outlier. The revised calculated mean for AA for the non-QDPE group was 3.20, (SD = 0.56) and for the QDPE group it was 3.33, (SD = 0.57).

There was no significant difference found between the two PE programs and AA. It was hypothesized that students who participate in a QDPE program would achieve higher ratings of AA than would the students in a non-QDPE program. A t test for independent samples was used to compare the means of the two groups and resulted with t (1, 107) = -1.472, p = .144. With the outliers removed t (1, 101) = -1.159, p = .249. Both t test values reveal that there was no significant difference between the two types of PE programs for AA.

Table I

Frequency of AA Scores for non-QDPE and QDPE Programs with Inclusion of Outliers

		Non- QDPE		QDPE	
Interval	Class Mark	Frequency of students	Percentage	Frequency of students	Percentage
0.5 – 1.5	1				
1.5 – 2.5	2	6	12 %	5	8 %
2.5 – 3.5	3	27	55 %	30	50 %
3.5 – 4.5	4	16	33 %	21	35 %
4.5 – 5.5	5			4	7 %
Totals		49		60	

Table II

Frequency of AA Scores for non-QDPE and QDPE Programs with Exclusion of Outliers

Interval	Class Mark	Non-QDPE		QDPE	
		Frequency of students	Percentage	Frequency of students	Percentage
0.5 – 1.5	1				
1.5 – 2.5	2	5	11 %	3	5 %
2.5 – 3.5	3	27	56 %	30	55 %
3.5 – 4.5	4	16	33 %	21	38 %
4.5 – 5.5	5			1	2 %
Totals		48		55	

The second comparison of the two PE programs and AA involved the examination of the frequency of the participant's score on the report card. The results revealed that the non-QDPE group consistently had more report card marks at a lower level than the QDPE group. In addition, only the QDPE group had participants with a mean class mark of 5, even with the outliers removed. See Table I and II for details of the comparison.

Type of PE Program and Student PAC

This section examines whether the PAC ratings of students in the non-QDPE program significantly differ from the students in the QDPE program. PAC is one of the six subscales measured on the Self-perception Profile for Children (SPC) by Harter (1985). For a description of the SPC see Chapter Three. In this study participants' scores ranged from a value of 8 to 24. Data for PAC was used from 107 participants (non-QDPE = 49 and QDPE = 58) who completed the SPC. Some of the participants were away on the day of testing and the researcher was unable to meet with all of them to have

them complete the SPC.

A comparison of the means was used to investigate the difference between type of PE program with PAC. The mean value for PAC for the non-QDPE was 18.27, (*SD* = 4.24) and for the QDPE group it was 18.69, (*SD* = 3.03). Three outliers were found to exist only in the non-QDPE group (non-QDPE = 46 and QDPE = 58). When these outliers were removed the means for PAC revealed the non-QDPE group was now higher than the QDPE group (M = 18.85, *SD* = 3.66; M = 18.69, *SD* = 3.03 respectively).

It was hypothesized that students in the QDPE group would have higher ratings of PAC than would students in the non-QDPE group. It was believed that students in the QDPE program were receiving higher quality instruction relating to athletic competency, which may be a mediating factor contributing to QDPE students achieving higher ratings of PAC. The means of the two groups were compared using a *t* test for independent samples. With the inclusion of the outliers the results revealed there was no significant difference between the groups for PAC, $t(1, 105) = -0.602$, $p = .549$. With the outliers removed, $t(1, 102) = 0.241$, $p = .810$. There was no significant difference between the two PE programs for PAC.

Type of PE Program and Student PSC

This section examines whether the PSC ratings of students in the non-QDPE program significantly differ from the students in the QDPE program. The difference between the type of PE program and student PSC was examined using a comparison of means. PSC is another subscale of the SPC (Harter, 1985) used in this study (See Chapter Three for a description). Data was collected from 107 participants (non-QDPE = 49 and QDPE = 58) with the same four participant's scores missing as for the PAC

measure.

The mean value for PSC for the non-QDPE group was 17.65, (SD = 3.96) and for the QDPE group it was 17.66, (SD = 3.86). When the three outliers were removed (non-QDPE = 48 and QDPE = 56) the mean of PSC for the non-QDPE group was 17.88, (SD = 3.68) and for the QDPE group it was 18.02, (SD = 3.40). The QDPE group showed slightly higher ratings of PSC.

It was hypothesized that the QDPE group would have higher ratings of PSC. The means of the two groups were compared using a t test for independent samples. No significant difference was found. With the inclusion of the outliers the results indicated t (1, 105) = -0.003, p = 0.998. Removing the outliers also resulted in no significant difference, t (1, 102) = -0.205, p = 0.838. There was no significant difference between the two types of PE program for PSC.

Type of PE Program and Student LTA

This section examines whether the LTA ratings of students in the non-QDPE program significantly differ from the students in the QDPE program. An investigation of the type of PE program and student LTA was undertaken using a comparison of means as well as an examination of the frequency LTA scores. LTA data was collected from two instruments, the LTEQ-M and the YR-LTA (see Appendix F and H respectively). For data analysis four measures were used. One measure was the seven-day recall that compiled a detailed list of the activities done for 15 minutes over a seven-day period outside of instructional PE classes. Another measure was a year recall of community recreational activities done during the previous year. A third measure was a year recall of school activities done during the previous year. Lastly, a measure of both school plus

community involvement was used in the data analysis.

Type of PE Program and Seven Day Recall.

A total of 109 participants completed the seven-day recall (non-QDPE = 51, QDPE =58). The mean score for level of activity of the non-QDPE group was 152.25, *SD* = 100.45 and for the QDPE group it was 138.10, *SD* = 85.15. Five outliers were removed from the data (non-QDPE = 48, QDPE = 56) and a recalculation of the mean score revealed the mean for the non-QDPE group was 135.19, *SD* = 75.09 and for the QDPE group it was 126.93, *SD* = 61.57. In both cases the non-QDPE participants were more active outside of instructional PE classes than the QDPE group.

It was hypothesized that students who participate in a QDPE program would achieve higher activity levels outside of their instructional PE class. No significant difference was found using a *t* test for independent samples to compare the means of the two groups, $t(1, 107) = 0.796$, $p = 0.428$. With the outliers removed results revealed $t(1,102) = 0.616$, $p = .539$. There was no significant difference between the two types of PE programs for seven-day recall of activity levels.

Type of PE Program and Year Recall – Community.

A total of 75 participants completed the YR-LTA (non-QDPE = 40, QDPE = 35). Only the information concerning the number of the organized activities undertaken by the participants in the previous year sponsored by the community were examined in this section. The mean score of the number of activities undertaken by the non-QDPE group was 1.59, *SD* = 1.25 and for the QDPE group it was 1.78, *SD* = 1.44. One outlier was removed from the data (non-QDPE = 40 and QDPE = 34) and a recalculation revealed a mean of 1.59, *SD* = 1.25 for the non-QDPE group, and for the QDPE group it was 1.66,

SD = 1.26. In both cases the non-QDPE group participated in less community sponsored activities outside of the instructional PE classes than the QDPE group.

It was hypothesized that students who participated in a QDPE program would be inclined to be involved in more activities outside of instructional PE class than the non-QDPE group. No significant difference was found using a *t* test for independent samples to compare the means of the two groups, $t(1, 73) = -0.606$, $p = 0.547$. With the outlier removed (non-QDPE = 40, QDPE = 34) results revealed $t(1,72) = -0.231$, $p = .818$. Both *t* test values revealed that there was no significant difference between the two groups when comparing the number of activities each group participated in outside of the instructional PE class sponsored by the community.

A further comparison of the two types of PE programs and YR-LTA specific to community sponsored activities participated in during the previous year involved the examination of the frequency of the number of participants by the number of activities (see Table III). The cumulative percentage frequency indicated that the two groups were similar in the number of participants involved in community sponsored activities.

Table III

Number of Participants by Type of PE Program Involved in Community Recreation During the Year

	Non-QDPE			QDPE		
Number of Activities	Number of Subjects	Percent	Cum. Percent	Number of Subjects	Percent	Cum. Percent
0	9	23	23	9	25	25
1	11	28	51	7	19	44
2	9	23	74	7	19	63
3	7	18	92	11	31	94
4	3	8	100	1	3	97
5	0	0	100	1	3	100

Type of PE Program and Year Recall – School.

The same participants who completed the year recall - community were also asked to record the number of school sponsored activities they were involved with from the previous 12 months (non-QDPE = 40, QDPE = 35). The mean score of the number of activities undertaken by the non-QDPE group was 1.13, *SD* = 1.24 and for the QDPE group it was 1.72, *SD* = 1.06. One outlier was removed from the data (non-QDPE = 39, QDPE = 35) and a recalculation of the mean score revealed the mean for the non-QDPE group was 1.03, *SD* = 1.08 and for the QDPE group it was 1.72, *SD* = 1.06. In both cases the lower mean of the non-QDPE group indicated that the group participated in a smaller number of school sponsored activities outside of the instructional PE classes than did the QDPE group.

Table IV

Frequency Table of Year Recall - School

	Non-QDPE			QDPE		
Number of Activities	Number of participants	Percent	Cum. Percent	Number of participants	Percent	Cum. Percent
0	13	33	33	3	8	8
1	18	46	79	14	39	48
2	1	3	82	12	33	81
3	5	13	95	4	11	92
4	1	3	98	3	8	100
5	1	3	101	0	0	100

Note. Due to rounding off the percentage totals may exceed 100

It was hypothesized that students who participate in a QDPE program would be influenced to be involved in more activity outside of instructional PE classes than the non-QDPE group. A significant difference was found using a *t* test for independent samples to compare the means of the two groups, $t(1, 73) = -2.223$, $p = 0.029$. With the

outliers removed results revealed t (1, 68) = -2.616, p = .011. Both t test values revealed that the difference was significant between the two groups when comparing the number of activities each group participated in outside of instructional PE classes sponsored by the school.

A further comparison of the two types of PE programs and school-sponsored activities was undertaken using a frequency table (see Table IV). The cumulative percentage frequency indicated that the two groups were similar in the involvement of students in school sponsored activities. However, one exception was that the non-QDPE group had a larger percentage of participants choosing not to participate in any school-sponsored activities at all.

Type of PE Program and Total Year Recall of Both School and Community.

A combined score of the sum the responses for YR-com and YR-sch was calculated. The total number of activities was recorded from the YR-LTA instrument regardless of the category (i.e. community or school sponsored). The mean score for level of activity of the non-QDPE group was 2.72, SD = 1.57 and for the QDPE group it was 3.50, SD = 1.99 (non-QDPE = 39, QDPE = 36). One outlier was removed from the data (non-QDPE = 38, QDPE = 36) and a recalculation revealed the mean of the non-QDPE group was 2.72, SD = 1.21 and for the QDPE group it was 3.28, SD = 1.69. In both cases the non-QDPE group participated in fewer activities outside of the instructional PE class than the QDPE group.

It was hypothesized that students who participate in a QDPE program would be involved in more activities outside of the instructional PE class than the non-QDPE group. Comparing the means using a t test for independent samples revealed t (1, 73) =

-1.894, $p = 0.062$. With the outlier removed $t(1,72) = -2.351$, $p = .021$. Only the t test with the outlier removed revealed that there was a significant difference between the two groups when comparing the number of activities each group participated in outside of gym class.

A further comparison of the two PE programs and year recall of both school and community sponsored activities was completed using a frequency table. An examination of cumulative percentage frequency indicated that the non-QDPE group was more active in structured activity outside of the instructional PE class than the QDPE group. The non-QDPE group had a larger cumulative percentage of participants choosing to participate in sponsored activities outside of the instructional PE for all activities (see Table V).

Table V

Frequency Table of Total Year Recall Community and School

	Non-QDPE			QDPE		
Number of Activities	Number of Participants	Percent	Cum. Percent	Number of Participants	Percent	Cum. Percent
0	2	5	5	1	3	3
1	6	15	20	6	17	20
2	10	26	46	6	17	37
3	12	31	77	6	17	54
4	4	10	87	5	14	68
5	4	10	97	5	14	82
6	0	0	97	4	11	93
7	0	0	97	3	8	101
8	1	3	100	0	0	101

Note. Due to rounding off the percentage total may exceed 100

The Relationship of PSC and AA

This section examines the strength of the relationship between PSC with AA (irrespective of the type of PE program). The data was examined using a Pearson

moment correlation coefficient and was found to be significant ($r = 0.494, p < 0.01$). With the outliers removed the correlation was also significant ($r = 0.508, p < 0.01$). With the inclusion and exclusion of the outliers, a positive relationship was found to exist between PSC and AA.

The Relationship of LTA and AA

This section examines the strength of the relationship between all four measures of LTA and AA (irrespective of the type of PE program). The data was examined using a Pearson moment correlation coefficient. It was hypothesized that the leisure time activity level regardless of type of PE program would show a positive relationship with AA.

The Relationship of Seven Day Recall and AA

No significant correlation was found to exist between the seven-day recall and AA. The correlation value was $r = -0.032, p > .05$. With the outliers removed $r = 0.007$, $p > .05$.

The Relationship of Year Recall - Community and AA

No significant correlation was found to exist between the year recall - community and AA. The correlation value was $r = 0.129, p > .05$. With the outliers removed $r = 1.38, p > .05$.

The Relationship of Year Recall - School and AA

No significant correlation was found to exist between the year recall - school and AA. The correlation value was $r = 0.042, p > .05$. With the outliers removed $r = -0.051$, $p > .05$.

The Relationship of Total Year Recall Community and School and AA

No significant correlation was found to exist between the total year recall of

community and school and AA. The correlation value was $r = 0.122$, $p > .05$. The correlation value with the outliers removed was $r = 0.146$, $p > .05$.

The Relationship of PAC and LTA

This section examines the strength of the relationship between PAC and all four measures of LTA (irrespective of the type of PE program). The data was examined using a Pearson moment correlation coefficient. It was hypothesized that PAC would show a positive relationship with the leisure time activity of the participants regardless of type of PE program.

The Relationship of PAC and Seven Day Recall

No significant correlation was found to exist between PAC and seven-day recall. The correlation value was $r = 0.093$, $p > .05$. With the outliers removed, the correlation showed no significance, $r = -0.062$, $p > .05$.

The Relationship of PAC and Year Recall - Community

A significant correlation was found to exist between PAC and year recall - community. The correlation value was $r = 0.297$, $p = .011$. With the outliers removed, the correlation continued to exist and be significant, $r = 0.258$, $p = .032$.

The Relationship of PAC and Year Recall - School

No significant correlation was found to exist between PAC and year recall - school. The correlation value was $r = 0.055$, $p > .05$. With the outliers removed the correlation continued to be weak and no significance was found, $r = -0.056$, $p > .05$.

The Relationship of PAC and Total Year Recall Community and School

A significant correlation was found to exist between PAC and total year recall community and school combined. The correlation value was $r = 0.256$, $p = .030$. . With

the outliers removed the correlation was still found to be significant, $r = 0.263$, $p = .027$.

It was hypothesized that PAC would have a positive relationship with LTA. In this study, this was found to be true for PAC and YR-community and for PAC and total YR-community and school.

Summary

In this study seven specific questions were examined, in three areas. The first area was a comparison between the type of PE program (QDPE and non-QDPE) and four dependent variables (AA, PSC, PAC, and LTA). The second area of study examined the strength of the relationship between student PSC and AA and between LTA and AA, irrespective of the type of PE program. The third area examined the strength of the relationship between student PAC and LTA.

The rating of student's AA, PAC and PSC did not differ significantly when comparing the two types of PE programs. However, the comparison of the two types of PE programs and year recall of school activities revealed that the mean of the QDPE group was higher than the mean of the non-QDPE group and this difference was found to be significant. Participants from the QDPE program participated in intramural school sponsored activities significantly more than non-QDPE participants. The comparison of the two types of PE programs and total year recall of school plus community activity involvement revealed that the mean of the QDPE group was higher than the mean of the non-QDPE group and it also was found to be significant with the outliers removed. Participants from the QDPE program were involved in intramural school and/or community activities significantly more than non-QDPE participants.

AA was also examined with two specific variables regardless of type of PE

program. PSC, regardless of PE program, was found to have a positive and significant correlation with AA. The four measures of LTA were shown to have no correlation with AA. Only the total year recall had a positive correlation however it was extremely small.

The last area of investigation was to evaluate the strength of the relationship of level of student PAC and all four variables of LTA. A significant correlation was found between PAC and year recall – community and for PAC and year recall – community and school combined.

CHAPTER FIVE

Discussion

The findings of this study provide partial support for the hypotheses that there was a difference between students in the non-QDPE and QDPE programs on factors related to academic achievement (AA), perceived athletic competence (PAC), perceived scholastic competence (PSC), and leisure time activity (LTA).

The premise of this study was that the two types of physical education (PE) programs investigated were indeed different from one another. In order to distinguish between the two types of PE programs used in this study, two features were selected from the definition of QDPE (see Chapter One). The first feature was the frequency of PE instruction. The non-QDPE students participated in four half-hour PE classes in a five-day week. The QDPE students participated in five PE classes, one daily instruction class for one half-hour. The second feature was the level of university training in the area of physical education of the teacher responsible for the PE instruction. The assumption was that a physical education specialist (a teacher with a BPE) would provide a higher level of quality PE instruction than would a generalist teacher. To differentiate the quality of the PE instruction of the two PE programs arrangements were made to observe classes conducted by one generalist teacher and each of the two PE specialists. In both classes taught by the generalist teacher, the students were engaged in a dodge ball type game. During the same week, one of the PE specialist teachers, who was the researcher for this study was observed conducting a volleyball class that involved skill progressions in one of the QDPE program schools. The other PE specialist teacher was observed engaging the class in a dodge ball type game in the other QDPE program schools. For this

observation the lateness of the time in the school year, June, was a factor as to why students were engaged in a games lesson with little emphasis on physical skill development. The style and content of the classes observed in this study were similar to the style observed by other researchers. For example, Placek and Randall (1986) and Patterson and Faucette (1990) noted that non-specialists teaching non-QDPE programs tend to engage their students in game activities and tend to avoid activities that include skill progressions.

The observations of the two PE programs were conducted using the QDITC and the Duration Recording Time Line observation instruments. The QDITC gives a percentage score of the total number of quality components for introduction/closure and task presentation aspects of the lesson. The higher percentage scores for the QDPE program indicate that more of the desired quality teaching components were present in the lessons conducted by the PE specialists.

The Duration Recording Time Line used in this study distinguished five specific student behaviors for six randomly selected students. Each selected student was observed for a five-minute interval with behavior recorded every fifteen seconds. The two PE programs showed very similar break down of the percentage of class time students engaged in specific behaviors. In comparison to the literature, both PE programs used in this study appear to have a higher percentage of time where students are appropriately engaged. Verabioff (1986) summarized some of the research findings indicating the percentage of class time students were engaged in motor activity: 24 % in a study by Goode, 26 % in a study by Verabioff, 25 % in a study by Lucas and Reid, and 31.3 % in a study by Godbout et al. In another study, the average amount of class time students were

engaged in motor activity was 30% (Placek & Randall, 1986). Rink (1996) is very critical of the low amount of time students are engaged in purposeful practice of physical skills. All the observed classes in this study had a higher percentage of total class time with the students appropriately engaged (non-QDPE = 52% and QDPE = 49%). Perhaps the quality of the two programs in this study were similar based on the observed student behaviors and both had positive features in relation to recommendation for quality PE programs.

The largest difference between the two programs on the Duration Recording Time Line was the amount of time students engaged in listening behavior in a class directed by a PE specialist teaching the QDPE program. The larger amount of time students engaged in listening behavior may have been the result of receiving skill instruction (i.e. verbal breakdown of the skill) and/or the PE specialist giving more verbal feedback (Placek & Randall, 1986). As outlined in the program of studies skill acquisition is an aim of PE (Alberta Education, 1998). By the nature of the content and style of the observed classes, the students in the QDPE program may develop more refined motor skills as a result of useful information and feedback. It is recommended by motor learning experts that relevant information and feedback contribute to motor learning opportunities (Kamal & Gallahue, 1980; Rink, 1996). Patterson and Faucette (1990) found that specialist teachers did produce students with superior motor performance compared to generalist teachers.

Another difference between the two PE programs was the slightly lower time that the students were engaged in management and off task behavior in the QDPE classes. PE teachers must be good managers (Rink, 1996) to make the effective use of class time for good practice. Good managers respond quickly to inattentive and disruptive behavior.

The results of the Duration Recording Time Line, albeit very small, showed that the PE specialists may be better managers.

In all there were five observed differences between the two PE programs in this study. These were the frequency of instruction, the content of classes, the higher percentages for class introduction/closure and for task presentation and the amount of time students engaged in listening behavior. Despite the small size of the observed differences between the two PE programs, the researcher feels the students in the QDPE programs were receiving a slightly higher level of quality instruction than the non-QDPE students.

The similarity between the two PE programs may be the result of the researcher using a sample of convenience. This similarity may have also contributed to the small differences found when examining the dependent variables and why so many differences were not significant. In the future, research should examine the nature of the instruction to determine whether the two types of PE programs are indeed different in terms of quality. Suggested factors to study include teacher feedback and the use of other instruments to examine the activities of the students and the management skills of PE teachers. Perhaps the use of observation instruments that provide information on student success rate, feelings related to positive self-concept and intrinsic motivation may help determine whether the type of PE program impacts self-esteem/self-concept and variables such as AA or PAC.

Type of PE Program and Selected Variables

Type of PE Program and Student AA

The type of PE program did not appear to influence student AA. A *t* test for independent samples revealed the small difference between the two means in favor of the QDPE program was not significant. It was hypothesized that students who participated in a QDPE program would achieve higher ratings of AA than would the students in a non-QDPE program.

The AA may have been similar in both PE programs because both the generalist and the PE specialists provided quality PE instruction. The measures used to distinguish differences in the PE programs due to instruction by a PE specialist or a generalist teacher revealed only small differences. Another consideration to explain the similar AA of the two PE programs may be that the difference of one class a week is of little consequence when examining AA (QDPE = 5 days/week; non-QDPE = 4 days/week).

It appears that elementary age students can spend 30 minutes a day engaged in physical education instruction and receive all the health benefits associated with daily activity and not jeopardize their AA. There does not appear to be a negative impact on AA despite the loss of academic time in the school schedule to accommodate daily PE. This finding is consistent with other research findings in the literature (Dwyer et al., 1996; Harris & Jones, 1982; Keller, 1982; Kirkendall, 1986; Sallis et al., 1999; Shephard et al., 1982; Siedentop & Siedentop, 1985). These studies indicate that daily PE instruction conducted by a PE specialist showed no hindering of AA. In fact Shephard (1996, 1997) found math achievement might be enhanced in elementary age students in a QDPE program.

Type of PE Program and Student PAC

In this study the type of PE program did not appear to influence student perceived athletic competence (PAC). It was hypothesized that students who participated in a QDPE program would possess higher levels of PAC than would students who participated in a non-QDPE program. School PE programs are believed to hold potential for developing self-esteem in children (Whitehead & Corbin, 1997). Being good at physical activity has been seen as contributing to the development of ones overall positive self-concept (Gallahue, 1996). Gallahue (1995) created a model to understand the role of perceived competence in the development of self-concept. He contends that perceived competence in a specific domain, if the individual perceives it as important, will have a significant impact on actual competence that in turn impacts self-confidence, self-esteem, and ultimately self-concept. To promote PAC, an individual needs exposure to physical activities and opportunities for successful skill development. To promote skill development, students must be engaged in meaningful practice during PE classes. School PE programs have a great potential to develop children's physical skills because most children attend school. The literature supports the premise that specialist teachers promote more skill development than do non-specialist teachers. Marshall and Bouffard (1994) found higher gains in skill by obese students in a QDPE program than a non-QDPE program. Placek and Randall (1986) found more time was dedicated to skill practice in a PE specialist teacher's class than in a non-specialist's class. In this study, only the PE specialist was observed engaging his class in skill practice. However, the possession of a BPE (Bachelor of Physical Education) does not always ensure optimal motor engagement behavior by students in physical education (Placek & Randall).

Halloway (1991) downplays the importance of specialist teachers and states the emphasis in PE should be on providing students with a broad range of experiences using a developmental approach. She contends that the K-12 curriculum must have each year's course content build on the previous year's experiences. Other authors have found that teachers who use self-referent criteria for measuring success encourage their students to attempt more challenging tasks when learning motor skills (McKiddle & Maynard, 1997; Solmon & Boone, 1993)

This study found no difference between the two PE programs in promoting PAC. Perhaps both programs were missing the factors necessary to promote student PAC or both programs had these factors operating in a similar way and to the same extent. Whether a specialist or a generalist teacher instructs the PE classes, they must be aware of the "factors" that promote PAC and motivate children to learn and improve their motor skills. The literature suggests that PE teachers might be able to impact PAC by providing self-referent criteria for students to measure progress (McKiddle & Maynard, 1997; Solmon & Boone, 1993), and structure the learning tasks so children experience positive affect (Harter, 1981), and feelings of success (Fox, 1994; Gallahue, 1995; Harter, 1978).

An explanation for the non-significant findings in this study may be that the two programs were indeed more similar than different in regard to the teaching of the PE classes. Also the difference of one class a week in the two programs used in this study may be of little consequence when examining student PAC. Influences on student PAC may be seen when comparing PE programs that are very different from each other as compared to programs that are similar.

Future studies should examine the quality of the PE program in these areas.

Firstly, studies should examine if the program is following a developmental curriculum and hence should have a positive impact on student PAC. Secondly, studies should examine if the group activities encourage the success of each individual and hence should have a positive impact on student PAC. Thirdly, studies should examine if students are engaged in relevant and challenging practice that promotes individual skill development. Lastly, studies should examine if teachers are structuring their classes to minimize waiting time and off task behavior, hence promoting positive use of time for skill development and hence promoting PAC. Future studies in Alberta will be able to study the impact of the new PE curriculum, set to begin September 2000, to examine if it promotes the development of PAC. This new curriculum does aim at the development of skills through developmentally appropriate and success oriented activities.

Type of PE Program and Student PSC

The type of PE program did not appear to influence the level of student perceived scholastic competence (PSC). It was hypothesized in this study that students who participated in a QDPE program would possess higher levels of (PSC) than would students who participated in a non-QDPE program

Harter's competency motivation theory was the theoretical framework used in this study. Competency motivation theory ascertains that human competencies are domain specific (i.e. scholastic competency, social acceptance, athletic competency, physical appearance, behavior conduct and global self-worth). Perceived competency is linked to the level of personal motivation to engage in specific successful behaviors. Engaging in successful behaviors are related to intrinsic motivation (Harter, 1978, 1981, 1992; Vallerand & Reid, 1984), mastery goal orientation (Dweck, 1986; Elliot & Dweck, 1988)

and persistence at learning a task (Dweck; Dweck & Leggett, 1988; Feltz & Petlichkoff, 1983; Harter, 1978; Roberts, 1992). Perceptions of competence will encourage effort, persistence, and high levels of achievement and positive affect (Weiss, Ebbeck, & Horn, 1997). To promote PSC in PE, students should experience success and positive affect from participating in activities that challenge them. A student's decision to continue making attempts to master a challenging task is influenced by the individual's sense of perceived competence, self-worth and positive affect (Harter, 1985). McKiddle and Maynard (1997) state that any information from past or recent assessments of performance can be used to evaluate competence.

This study found no difference between the two PE programs in promoting student PSC. Perhaps both programs were missing the factors needed to promote PSC, or both programs had these factors operating in a similar way to the same extent. A possible explanation for the non-significant findings may be that the two programs were indeed more similar than different and hence, had a similar impact on PSC. The measures used to distinguish differences in the programs relating to the teaching of PE classes revealed only small differences and the observations of the PE programs did not focus on factors relating specifically to "scholastic competence". Also, perhaps the difference of one class a week in the two programs may be of little consequence when examining student PSC.

Future studies should examine the PE program in relation to factors that might impact PSC, specifically. Firstly, studies should examine if the program is following a developmental curriculum and hence, should have a positive impact on cognitive and affective factors relating to PSC. Secondly, studies should examine if the students are

engaged in relevant and challenging practice that promotes success, cognitive process and individual skill development.

Type of PE Program and Student LTA

The results of this study show that the type of PE program may have some influence on student leisure time activity (LTA). It was hypothesized, in general, that students who participated in a QDPE program would have higher ratings of physical activity in all four measures of LTA than would students who participated in a non-QDPE program.

The choice of engaging in an active lifestyle is a conscious decision by the individual. It appears that mental attitude and psychological readiness play a role in the decision. Engstrom (1986) examined the sports activity of 15-year-olds for a period of 15 years and found that the early sports involvement provided the psychological readiness needed to continue to participate in physical activity as a lifestyle choice. A study isolated to the province of Newfoundland found that an active lifestyle by young adults was more dependent upon attitude than the availability of recreation facilities (Eastman et al., 1992).

The type of PE program has been shown to have some influence on an active lifestyle choice. Hunt (1995) found that students in a daily PE program were more active outside of school. Eastman et al. (1992) found that elective PE programs, that is grade 11 and 12, were influential in encouraging young adults to undertake an active lifestyle.

Type of PE Program and Seven Day Recall.

It was specifically hypothesized that students who participated in a QDPE program would achieve higher activity levels as measured on the seven day recall

instrument for activities outside of their instructional PE class than would students from the non-QDPE program. However, no significant difference was found when comparing the means of the two groups.

Interestingly, when examining the mean scores for the two PE programs, the participants from the non-QDPE program were shown to be slightly more active (M = 152.25, SD = 100.45) than the participants from the QDPE program (M = 138.10, SD = 85.15). The non-QDPE participants were more active during the week outside of instructional PE classes than the QDPE group for the seven-day period of this study.

A possible explanation for this difference may be that the grade five students in this study may have had an innate need to expend a minimum amount of energy per day in some form of activity. If they did not have a PE class that day then they may have pursued the fulfillment of this need outside of the PE class. Bailey (1979) advocates that children need to engage in self-generated spontaneous play to help promote their health and proper growth. Our society tends to generalize that children are not as physically active today as they were years ago. However, The Canadian Fitness and Lifestyle Research Institute (CFLRI, 1994) found the trend in the intensity of children's physical activity during the 1980's showed a decline in moderate to high intensity activity but an increase in the amount of low intensity activity. Although the need for play was not the focus of the CFLRI research, the results offer some support to the notion that children innately need to be active.

Type of PE Program and Year Recall - Community.

It was hypothesized that students from a QDPE program would have participated in more activities sponsored by the community outside of their instructional PE class than

would students from the non-QDPE program during the past year. No significant difference was found when comparing the means of the two PE programs in this study. An examination of the cumulative percentage frequency also indicated that the two PE programs were similar in the number of participants involved in community sponsored activities (see Table III).

Analysis of the YR-LTA was hindered by the poor return of questionnaires. The researcher speculates that the poor return of YR-LTA may have been due to several factors. One factor may be that students who did not return their YR-LTA questionnaire may have been indicating that they did not participate in any activities at all sponsored by the community. They did not fully understand the importance of the documentation or were embarrassed that they did not participate in any activity outside of PE class. Another factor influencing the return of the questionnaires was the persistence of the participating teacher to remind and motivate the participant students to return their YR-LTA. Each classroom teacher assigned a different level of priority to encouraging the participants to return their YR-LTA. One non-QDPE participating teacher motivated his students with an extrinsic reward of more gym time to those who returned the YR-LTA. A third factor was the role of parents. Parents were required to assist the participant in the completion of the questionnaire. It was assumed that parents would reduce the memory limitations in the recall of activities done over the last 12 months. Parent like classroom teachers may have assigned a low priority to motivate their son or daughter to complete and return the questionnaire. Some parents may not have made time or been able to complete the questionnaire. The return rate of YR-LTA questionnaires from the non-QDPE program was $n = 40$ (78 %) and for the QDPE program was $n = 35$ (58 %).

Type of PE Program and Year Recall - School.

It was hypothesized that students from a QDPE program would have participated in more activities sponsored by the school in addition to their instructional PE class than would students from the non-QDPE program during the past year. A significant difference was found when comparing the means of the two groups. The mean score of the number of activities undertaken by the non-QDPE group was 1.13, $SD = 1.24$ and for the QDPE group it was 1.72, $SD = 1.06$ meaning students in the QDPE schools were more active in intramurals activities (non-QDPE = 40 and QDPE = 35).

Although a significant difference between groups from the two PE programs was found, the same problem of the poor return of YR-LTA recall forms affected this investigation. All schools in this study offered a similar number of intramural activities. However, an examination of Table IV indicates a much larger percentage of participants in the non-QDPE program did not participant in any school intramural activities at all. There must be some reason why more students in the QDPE programs stayed to participate in at least one school intramural activity. The personality and teaching style of the teacher sponsoring the intramural activity could influence the student's decision to participate. The students in the QDPE program may have liked the teacher or knew them better than the students in the non-QDPE program knew or liked their sponsoring teacher and therefore felt more comfortable to go after class to participate. Perhaps the activities were structured so that skill level was not a prerequisite to play and hence, lower skilled students were motivated to participate and experience positive affect. Research indicates that students in a QDPE program are likely to be more skilled (Marshall & Bouffard, 1994; and according to Roberts (1992) and Ulrich (1987) will seek out an environment to

show off these skills. Perhaps more individuals in the QDPE program were of this nature and sought an environment where they could show their skill. The results of this study showed no difference for the two PE programs for PAC, however, PAC has been shown to contributed to the individual participating in athletics (Feltz & Petlichkoff, 1983); Klint & Weiss, 1987; Roberts, Kleiber, & Duda, 1981). The aim of the new PE curriculum is to enable students to lead an active healthy lifestyle (Alberta Education, 1998). It is therefore assumed that current PE teachers would promote and provide opportunities for their students to be active outside of PE class. Future studies in PE could examine the effects of the new curriculum on community sports and recreation involvement.

Type of PE Program and Total Year Recall of Both School and Community.

It was hypothesized that students from a QDPE program would have participated in more activities sponsored by the community and the school outside of their instructional PE class than would students from the non-QDPE program during the past year. The total number of activities was recorded from the YR-LTA instrument regardless of the category (i.e. community or school sponsored intramural activity). The mean score for level of activity of the non-QDPE group was lower than for the QDPE group ($M = 2.72$, $SD = 1.57$ and $M = 3.50$, $SD = 1.99$, respectfully). No significant difference was found when comparing the means of the two groups however, with the one outlier removed, a significant difference was found.

Each school offered approximately the same number of activities. Yet more children in the QDPE program participated in a higher number of activities (see Table IV). Approximately 80 %, of the participants in the non-QDPE program participated in

only one activity or no activity at all. Far more participants in the QDPE program participated in two, three, or four of the school-sponsored activities than did participants in the non-QDPE program.

The Relationship of PSC and AA

It was hypothesized that a positive correlation would exist between PSC and AA regardless of the type of PE program. The results of this study supported the hypothesis. It was found that the level of student PSC did have a significant correlation with AA.

Motivation theories have long proposed that children's perceived competence would influence their performance in achievement situations. Competency motivation theory postulates that humans have an innate need to deal effectively or competently with their environment (Harter, 1978; 1985). Perceptions of competence will encourage effort, persistence, high levels of achievement and positive affect (Weiss et al., 1997). PSC does not seem to work by itself to influence AA. In this study PSC accounts for only 25% of the variance of AA. In the literature, PSC was almost always studied in conjunction with other dimensions of motivation to explain the participant's level of achievement.

Factors other than perceived competence influence children to seek or avoid challenges, whether they persist or withdraw from the challenge and whether they use or develop their skill. The classroom climate, be it mastery goal or performance goal oriented may be more influential than PSC alone in the motivation of the child (Ames & Archer, 1988; Dweck, 1986; Dweck & Leggett, 1988; Elliott & Dweck, 1988; Papaioannou, 1994; Solmon & Boone, 1993). High levels of PSC can influence the child to be more mastery goal oriented (Dweck; Elliott & Dweck,). Although PSC is

considered the factor underlying motivation, a mastery goal orientation may augment achievement behaviors.

Another possible influence on AA and on the level of PC is the level of intrinsic motivational orientation. Harter (1992) contends that higher levels of PSC and positive affect about school performance lead to a stronger intrinsic motivational orientation. She also contends that as grade level increases, student's motivation orientation becomes more extrinsic. Educators and parents who promote an extrinsic motivation orientation may be a student's worst enemy. It may be easier to manage children who are compliant and motivated by extrinsic rewards such as money or grades. However, this can lead to low interest in learning and hence poor achievement (Fink, Boggiano, Main, Barrett, & Katz, 1992).

Harter (1992) states that the students who do not succumb to an extrinsic motivation orientation do so because they have a high level of PSC. Rudisill (1989) found that the PSC was more important than achievement orientation (mastery or performance) of students. PSC has been found to be influenced by positive feedback (Vallerand & Reid, 1984) and positive affect (Harter, 1992). Harter contends that both success and failure can promote positive affect and in turn PSC. Success gives positive affect, providing the task was challenging, in and of itself. Failure, if the individual possesses a mastery learning orientation, can lead to feelings of pride in the attempt and responsibility for the failure, which in turn provides positive affect.

The findings of this study provide support for the relationship of PSC and AA. A PE teacher may be able to elevate student's level PSC by challenging them in the cognitive domain, stimulating positive affect and creating a learning environment that

promotes mastery goal orientation. To create a mastery goal orientation in the gym, PE teachers should include individualized instruction using techniques involving task cards and station work (Mandigo & Couture 1996), peer teaching, learning contracts, ability groupings, personalized systems of instruction and self-referent-grading criterion for assessment (Robinson & Turkington, 1992)

Future studies should examine the effect of different teaching styles and PSC. Is the teaching style in PE challenging students in the cognitive domain? In addition, further examination of other factors that are known to influence PSC and AA should be undertaken, with the intent of educating PE teachers as to how they might be better able to elevate PSC levels in their students.

The Relationship of LTA and AA

It was hypothesized that a positive correlation would exist between LTA and AA regardless of the type of PE program. Using a Pearson product moment coefficient of correlation, it was found that the level of LTA, as measured for all four sub-variables, did not have a significant correlation with AA.

It has been theorized that levels of physical activity are in some way connected to AA, thus the adage "a sound body, a sound mind". Piaget has suggested a link between the learning of physical and intellectual skills in young children (cited in CAPHER, 1988). Other researchers are convinced there is a link between physical activity and AA, although the nature of this link has not been definitely defined (Dwyer et al., 1996: Rarick, 1980; Shephard, 1997). Despite not having identified a direct link, regular physical activity has been shown to be beneficial to mental health, decreasing anxiety and

depression, enhancing mood and elevating levels of self-esteem (Kirchner & Fishburne, 1995; Taylor & Taylor, 1989; U.S. Department of Health and Human Services, 1996).

Some factors associated with LTA have been suggested in the research as contributing to AA. Moods are enhanced and a more positive attitude in general was shown by active individuals (Rarick, 1980). Rarick stated that active individuals were more attentive to the task and/or had an improved self-concept. Shephard (1997) also discusses improved self-concept and feels that physical activity helps create favorable changes in body image that lead to the enhanced self-esteem. The enhanced self-esteem leads to improved classroom behavior that is more conducive to learning. Young (1979) believes those physical activities influence AA by increasing oxygen and glucose levels in the brain. Bergin (1992) found that leisure activity was a modest predictor of AA and was less optimistic about a link between LTA and AA. Bergin suggests that a personality trait to achieve was responsible for an individual being physically active and achieving well in school.

The findings of this study do not support the relationship between LTA and AA. Kirkendall (1986) in a review paper on studies examining the correlation of physical and motor fitness and AA found that most showed little or no relationship existed. Kirkendall also points out that no study showed that exercise hindered AA. As the data presented in this study suggests that LTA in and of itself may not enhance AA, perhaps future studies should investigate factors that are mediating links between LTA and/or increased physical activity and AA.

The Relationship of PAC and LTA

It was hypothesized that a positive correlation would exist between PAC and LTA

regardless of the type of PE program. Partial support was found for the relationship between PAC and LTA. PAC was found to have a significant relationship with two of the four LTA sub-variables. A significant correlation was found between PAC and YR-community and between PAC and YR-community and school involvement. A significant correlation was not found between PAC and seven-day recall or between PAC and YR-school.

This study attempted to examine whether a child's level of PAC influences their participation in LTA outside of PE class. The literature suggests that individuals are motivated by several factors that influence their amount of LTA. Competency motivation theory provided a strong foundation on which to explain enrollment and involvement in sports and other LTA. Harter (1981) contends that individuals who believe their competence to be high in a specific domain will pursue activities that let them develop that competency or display that competency. These individuals expect to perform well, persist longer and believe success is attributed to ability (Roberts et al., 1981). Higher levels of perceived competency in a domain lead to a higher level of intrinsic motivation, which positively influences effort (Williams & Gill, 1995).

Klint and Weiss (1987) contend that competencies are a viable explanation of what motivates a child to begin his/her involvement in sports. They contend that PAC does not work in isolation to motivate children into sports. They found that if social competencies were high the child entered sports for affiliation reasons. If the child had high PAC, then the child entered sports primarily for skill development. Ulrich (1987) states that in younger children (K to grade four) skill competency (i.e. actual skill level) was a greater motivation factor than PAC for the child to enter sports.

Fox (1994) believes that what influences PAC is the most important factor for physical educators to be concerned within their classes. Fox strongly feels that creating a mastery goal climate in the gym will help children to adopt a mastery goal orientation. By adapting a mastery goal orientation more children may experience success in PE leading to feelings of positive affect, and in turn to a belief of higher PAC.

The literature is consistent suggesting that physically active individuals possess a high level of PAC (Feltz & Petlichkoff, 1983; Roberts et. al., 1981) or possess factors that influence PAC, such as good physical skills (Ulrich, 1987), and/or an intrinsic motivation orientation (Fox, 1994; Klint & Weiss, 1987). In general, participants are significantly higher on cognitive, physical and general self-worth perceived competence sub-scales than non-participants (Klint & Weiss). Mandigo and Couture (1996) concur, adding that these individuals reported significantly higher ratings of fun while participating in organized sport. They further state that fun had a strong impact on their desire to continue participation.

The results of this study suggest that the level of PAC may influence some LTA involvement. The significant correlation found for both the YR-community and YR-community and school and PAC suggests that recreation in the community may be related to PAC levels. The significant results may be the result of the combined samples (QDPE and non-QDPE) making the sample size viable.

A possible explanation for the seven-day recall not being significant may be that the two groups were very similar and lacked variance. A possible explanation for YR-school involvement not being significant may be because the non-QDPE schools did not offer as many after school activities, but the number of students who participated in them

was high. This again may have affected the variance of the sample.

A study by Ulrich (1987) suggests that the age of the child may influence the importance of PAC as a motivating factor for LTA for that child. Ulrich found that actual skill level for children in grades K through four was more important than PAC. Perhaps some of the grade five students in this study were still at a level of maturity that actual skill level as a factor to influence their LTA involvement not PAC.

Two factors regarding PAC may affect a child's sport involvement; the high value society places on PAC in respect to sports involvement and PAC itself. PAC is one of the most influential factors affecting motivation in sport or physical activity (Harter, 1978). Feltz and Petlichkoff (1983) demonstrated the importance of PAC in continued sports involvement. They found that students with higher levels of PAC tend to stay involved in school sports and those with lower levels of PAC tend to drop out. Fox (1994) suggests that because society values sport competence and fosters a belief in children to do well in sport, children will regard PAC as a key component of their self-esteem. This rationale has been used in an attempt to explain some gender differences found in sport involvement. Because of the high value of sport proficiency expected of boys, their self-esteem is often tied to their sports success. This societal pressure causes boys to stay involved in sport. Society does not place as high a value on girls having PAC as it does for boys, so perhaps girls can drop out of sport and not have their self-esteem suffer (Fox; Gallahue, 1995).

The results of this study have implications for PE teachers at the elementary level. PAC appears to be related to LTA involvement. Physical educators should therefore be aware of their influence on PAC development in their students. They should be aware

that PAC can be shaped in children through the goal orientation created in their PE classes (mastery goal orientation) and ensure student positive affect results from each class. They should also provide a wide range of activities that are fun and that do not intimidate lower skilled students to try them. They should ensure each child can improve their physical skills as skill level may influence LTA. If this occurs, perhaps more children will be active in their lives as a result of developing higher levels of PAC. "The child who develops an accurate sense of PC and comes to feel in control of performance outcomes will be intrinsically motivated to participate in physical activities, will exert and sustain effort while striving toward challenging goals, and will be likely to attain such goals" (Weiss and Horn, 1990, p 257).

Implications

The results of this study support the findings in the current literature suggesting that QDPE instruction does not hinder AA. Schools that are currently providing their students with QDPE or even four days a week can confidently continue to do so despite political and public pressure to find some way to raise student achievement on provincial achievement exams. PE does not have to be the scapegoat of educators and politicians implying blame for poor performances on provincial achievement exams. Nor should it be the first target of school administrators who face cut backs when finding time in the school timetable to accommodate provincial initiatives such as early literacy and the new science curriculum. It appears that students in QDPE schools will continue to do as well academically as non-QDPE students. However, non-QDPE students may not be receiving the added health benefits that accompany a QDPE program.

The converse is also true; schools that are not currently providing QDPE and have used the afore-mentioned reasons not to provide QDPE can in fact provide QDPE knowing that their student's AA will not be jeopardized. Educators should note the physical health and mental health benefits that accompany QDPE in light of the comparable AA.

The type of PE program may influence some forms of LTA and this study supports the need for QDPE in more elementary schools in order to promote involvement in physical activity outside of the PE class. Knowing the unhealthy lifestyles by a large portion of our nation's population, and recognizing that adult health habits may be influenced by childhood lifestyles (Shephard, 1997), makes it crucial that initiatives should be taken to curb or reverse the present trend. Promoting QDPE in elementary schools may be money well spent by provincial governments and school districts. The government can pay now in the form of prevention or pay later in the form of inflated health care costs resulting from the inactivity habits of adults.

The results of this study also support the findings in the literature suggesting that individuals with higher levels of PAC also tend to participate in more LTA. The implication of this finding is that PE teachers should be aware of their influence on PAC development in children. They can provide quality PE instruction in part through a learning environment that encourages students to take reasonable risks, explore new ideas and develop their physical skills. In these ways, students may enhance their level of PAC, which in turn may encourage them to be more active in their leisure time. These students may enjoy the health benefits of an active lifestyle, which may carry on into their adult life style choices.

The third significant finding of this study was that PSC was related to AA. The implication of this result is that PE teachers should be aware of their influence on PSC. They can provide quality PE instruction in part that includes a learning environment that gives students a sense of control and challenges students in the cognitive domain. Perhaps PE teachers can follow the example of math teachers who have recognized that student learning of math concepts can be enhanced through the use of manipulatives. That is, the teaching or learning style involves "hands on" kinesthetic approach. PE teachers can employ problem solving and individualized instruction to challenge students to discover the answers rather than be given the facts pertaining to strategies and components of a physical skill. In this way, students might enhance their PSC and PE may be contributing to their overall academic success.

Summary

Advocates of QDPE have stated that a daily PE program with quality instruction will produce children who are happier, healthier and honed for learning. The purpose of this study was to determine if there was a significant difference between the students in non-QDPE and QDPE programs in four areas. The four areas were AA, PAC, PSC and LTA. The second purpose of this study was to determine if PSC and LTA each had a relationship with AA (irrespective of the type of PE program). The third purpose of the study was to determine if PAC had a relationship with LTA (irrespective of the type of PE program).

Harters' competency motivation theory was the theoretical framework used to investigate the perceived competencies of the grade five students and their relationship with AA and LTA. The Self-Perception Profile for Children (Harter, 1985) was used to

measure PSC and PAC. Report card marks were used to measure AA. LTA was measured with two questionnaires. One was a modified version of Leisure Time Exercise Questionnaire (LTEQ-M) from Godin and Shephard (1985). The year recall of leisure time activity (YR-LTA) recorded the number of sports teams and/or clubs that the participants were active with during the past 12 months. It asked the participant to distinguish those activities that were done at the school from those done in the community.

The results of this study indicate that QDPE does not hinder AA. The second finding about QDPE is that it may influence some forms of LTA. The other findings are not specific to QDPE alone, but both PE programs. They support the competency motivation theory and current literature in the area of feelings of competency and motivation. It was found that PAC was related to LTA and PSC was related to AA.

Conclusions

In conclusion, this study attempted to extend the findings of other research to determine the level of correlation between physical activity (physical education instruction and LTA) and AA, between PSC and AA and between PAC and LTA. Because students experienced no detrimental effect on AA in the QDPE program, promotion and support of QDPE should continue. QDPE does take time from the academic timetable in a child's school day; however, it may provide some needed health benefits to those students. Kirkendall (1986) found no study that showed that exercise hindered intellectual performance.

The results of this study were congruent with and supported the competency motivation theory. The findings concur that if an individual feels competent in a specific

domain they will pursue their talent or skill in that area and strive to improve their talent or skill. QDPE has many benefits that future studies may continue to verify. The quality of the PE program may prove to be more important than the daily instruction to be an influence on AA, LTA, PSC and PAC. Physical educators should strive to continue providing quality instruction and be more aware of how they can influence each child's perceived competency and lifestyle choices as well as AA.

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APPENDICES

Appendix A

Qualitative Dimensions of Lesson Introduction, Task Presentation, and Lesson Closure

(QDITC)

Qualitative Dimensions of Lesson Introduction, Task Presentation, and Lesson Closure (QDITC)

Teacher_____ Lesson Activity_____ Grade Level of Learners_____

Observer_____ Lesson #_____ Date_____/_____/_____

			Task Presentation												
			Pre-Tasks			Tasks					Post-Tasks			
											Learner		Teacher	
Description of Task	Number	Type of Task	Teacher Position	Learner Attention	Environment Arranged	Clarity	Demonstration	Appropriate # of Cues	Accuracy of Cues	Qualitative Cues Provided	Response Appropriateness	Learner Organization	Congruent Feedback	Motivational Objective
	1													
	2													
	3													
	4													
	5													
Frequency Totals			1= 2=	1= 2=	1= 2=	1=	1= 2=	1= 2=	1= 2=	1=	1= 2=	1= 2=	1= 2=	1=
Percent Scores			1= 2=	1= 2=	1= 2=	1=	1= 2=	1= 2=	1= 2=	1=	1= 2=	1= 2=	1= 2=	1=
Desirable Percent Scores														

Lesson Introduction		Scoring
1. Starting Point		1=Present
2. Lesson Purpose		2=Absent
3. Safety Addressed		
4. Warm-Up		
Lesson Closure		
5. Closing Point		
6. Review Skill Behavior		
7. Review Rule Behavior		
8. Equipment Collected		
9. Checklist		
Frequency Totals	1= 2=	
Percent Scores	1= 2=	
Desirable Percent Score		

Overall Percent Scores	
Introduction/Closure	
Task Presentation	

Type of Task
I=Incoming
R=Retaining
E=Extending
P=Rejecting
A=Applying

Teacher Position
1=All
2=Partial
3=Few

Learner Attention
1=All
2=Partial
3=Few

Environment Arranged
1=Ready
2=Partial
3=Not Ready

Clarity
1=Present
2=Absent

Demonstration
1=Present
2=Partial
3=Absent

# of Cues
1=1, 2, or 3
2=More than 3
3=0

Accuracy of Cues
1=Accurate
2=Inaccurate
3=None Given

Qualitative Cues
1=Present
2=Absent

Response Appropriateness
1=All
2=Partial
3=None

Learner Organization
1=All
2=Partial
3=Few

Congruent Feedback
1=Present
2=Partial
3=Absent

Task Objective
1=Present
2=Absent

Comments

_____

_____

_____

Necessary Changes for Next Lesson

1. _____
2. _____
3. _____

Appendix B

Duration Recording Time Line

Duration Recording Time Line

Date_____
Time_____
School QDPE / non-QDPE

Time	0	1 min	2 min	3 min	4 min
	I I I	I I I	I I I	I I I	I I I
Student 1					
	5 min	6 min	7 min	8 min	9 min
	I I I	I I I	I I I	I I I	I I I
Student 2					
	10 min	11 min	12 min	13 min	14 min
	I I I	I I I	I I I	I I I	I I I
Student 3					
	15 min	16 min	17 min	18min	19min
	I I I	I I I	I I I	I I I	I I I
Student 4					
	20min	21min	22min	23min	24min
	I I I	I I I	I I I	I I I	I I I
Student 5					
	25min	26min	27min	28min	29min
	I I I	I I I	I I I	I I I	I I I
Student 6					

Coding Directions

1. Observe one target student randomly selected for each five - minute period.
2. Record using a stop watch when the student is engaged in the following behaviors:

   L = listening to instructions

   M = getting ready for activity, management and organization.

   A = Appropriately engaged in motor activity with success.

   W = Waiting a turn or for start of activity.

   O = Off task, deviant behavior, doing the wrong thing - not on the task assigned by the teacher.

Appendix C

Teacher Consent Letter and Form

Faculty of Physical Education and Recreation
E-407 Van Vliet Centre,
University of Alberta
Edmonton , Alberta.
T6G 2H9
April 23, 1997

Dear teacher,

I am a graduate student working on my masters degree in the Faculty of Physical Education and Recreation. As part of my research, I am conducting a study examining the strength of the relationship between the physical education program and three dependent variables: student self-perceived competence, leisure time activities, and academic achievement. Information collected from this research will enhance the understanding of the role of physical education in student achievement and their leisure time pursuits. I wish to obtain your permission to work with your students, secure your cooperation to complete an evaluation of the participant's classroom achievement behavior, and get your permission to allow myself and my advisor to watch two of your PE classes. Only the students in classes with permission from their teachers will be asked to volunteer in the study. Non-participants will experience no change in their classroom routine or PE instruction. Also, as the teacher you will be asked to teach your PE classes as you normally would.

If you agree to participate in the study your responsibilities will be to:

1. Collect the permission forms and the year leisure activity questionnaire from participants.
2. Allow the researcher to administer the Self-Perception Profile for Children (SPC) questionnaire during their PE class at a mutually agreeable date (15 min.).
3. Assist the researcher administer the seven day leisure activity recall questionnaire for six consecutive school days (2 to 5 minutes a day).
4. Allow the researcher and his advisor to observe two PE classes, and provide some information about their PE program (i.e. year plans etc.).
5. Provide the researcher access to the participants' March report card marks.

All information and data collected in this research project will be treated with the strictest of confidence. You, your students, the parents, and the school are guaranteed anonymity throughout the entire process. Your evaluations will be kept confidential. The information gained from the questionnaires will not be shared with parents. All the information gained from the study will be used for my masters thesis and may be reported only at a professional meeting or for publication in professional journals. The study has been approved by the Ethics committee of the Faculty of Physical Education and Recreation at the University of Alberta and also the Calgary Board of Education. The principal of your school has been informed of the study and has given permission for me to approach you and the students in your class. As a volunteer in this study, you and your students have the right to withdraw from the study at anytime without consequence.

If you agree to volunteer to participate in this study, please complete the following

consent form and return it to Jim Jenkyns. Your consent form can be given to your principal and it will be picked up by Jim Jenkyns. You will receive a copy of the form you have completed. If you have any questions, please contact me at 239 - 7175. You may also contact Dr. Linda Thompson (Thesis Advisor) at the U of A at (403) 492 - 8274. Thank you for your time and cooperation. Your help is greatly appreciated.

Yours truly

Jim Jenkyns

Teacher Consent Form

My signature on this form indicates that I volunteer to participate in this study conducted by Jim Jenkyns. Titled: the relationship between the type of physical education program and student's academic achievement, leisure time activity, and perceived competence.

I understand the following:

1. I volunteer to participate in the study and have the right to withdraw from the project at any time.
2. I have received an explanation of the nature of the study and its purpose, methods and procedures (through a letter and discussion with the researcher).
3. There is no danger of physical or psychological harm to myself or my students.
4. The data collected and any resulting data will be confidential. My school, my classroom, and my identity will remain anonymous in any printed material produced or in any oral presentation.
5. I understand my role in the study involves:
   a) Collect the permission forms and the year leisure activity questionnaire from participants.
   b) Allow the researcher to administer the Self-Perception Profile for Children (SPC) questionnaire during their PE class at a mutually agreeable date (15-min.).
   c) Assist the researcher administer the seven day leisure activity recall questionnaire for six consecutive school days (2 to 5 minutes a day).
   d) Allow the researcher and his advisor to observe two PE classes, and provide some information about their PE program.
   e) Provide the researcher access to the participants' March report card marks.

_____	_____
Signature of Classroom Teacher	Name of Classroom Teacher (Print Last Name, First Name)
_____	_____
Date of Signature	Signature of Researcher (Jim Jenkyns)

Please return this completed form to your Jim Jenkyns by May 28, 1997. Keep the covering letter for your records. You will receive a copy of the completed consent form. Thank you.

Jim Jenkyns
c/o Dr. Linda Thompson
P-407 Van Vliet Centre
Faculty of Physical Education & Recreation
University of Alberta
Edmonton, AB, T6G 2H9

Appendix D

Parental Consent Letter and Form

Faculty of Physical Education and Recreation
E-407 Van Vliet Centre,
University of Alberta
Edmonton , Alberta.
T6G 2H9

March 13, 1997

Dear Parents or Guardian,

I am a graduate student working on my masters degree in the Faculty of Physical Education and Recreation. As part of my research, I am conducting a study examining the strength of the relationship between the physical education program and three dependent variables: student self-perceived competence, leisure time activities, and academic achievement. Information collected from this research will enhance the understanding of the role of physical education in student achievement and their leisure time pursuits. I wish to obtain your permission to have your child participate in the study and have your cooperation completing a leisure time activity questionnaire with your child. Only the participants with permission from their parents or guardians will be administered the questionnaires. The principal and the teachers have given consent to conduct the study with the grade five classes at your child's school. There will be no change to the curriculum and teachers will teach lessons as they normally would. Hence your child's involvement in this study will be to participate in PE as they normally would and complete questionnaires. Your child has been informed of the study.

All information and data collected in this research project will be treated with the strictest of confidence. You, your child, the teachers, and the school are guaranteed anonymity throughout the entire process. Your child's responses will be kept confidential. Your child's name will be written only on the permission form, his or her name will not be placed on the questionnaires or used in any written reports. Your child will be given an ID number which will placed on the questionnaires. The researcher will be the only person to know the identity of the ID number, and your child's name. The information gained will not be shared with your child's teachers. All the information gained from the study will be used for my master's thesis and may be reported at a professional meeting or for publication in professional journals.

All the data will be kept in a locked filing cabinet in a locked room.

The following is a list of the particulars for each questionnaire your child would complete:

1. Student self- perceived competence - will be completed by each participant during one PE class.
2. Leisure time activities, seven day recall - participants will complete a daily recall of the leisure time activities they participated in the previous day (5 minutes daily).
3. Leisure time activities, one year recall - parents and participants will complete a leisure time activity questionnaire together at home (15 minutes).

I am formally asking your permission to access your son's or daughter's report card to record **only** their achievement scores for language arts, math, science, and social studies.

3 Academic achievement - participant's marks for the March 1997 report card will be recorded and used in the data analysis.

The total time committed to the study by your child will be 75 minutes over six school days.

The study has been approved by the Ethics committee of the Faculty of Physical Education and Recreation at the University of Alberta and also the Calgary Board of Education. As a volunteer in this study, you and your child have the right to withdraw from the study at anytime without consequence.

If you and your child agree to volunteer to participate in this study, please complete the following consent form and return it to the classroom teacher by May 28, 1997. You will receive a copy of the form you completed. If you have any questions, please contact me at 239 - 7175. You may also contact Dr. Linda Thompson (Thesis Advisor) at the U of A at (403) 492 - 8274. Thank you for your time and cooperation. Your help is greatly appreciated.

Yours truly

Jim Jenkyns

Parent/Guardian and Child Consent Form

My signature on this form indicates that my child volunteers to participate and that I give my permission for them to participate in this study conducted by Jim Jenkyns, titled: The relationship between the type of physical education program and student's academic achievement, leisure time activity, and perceived competence.

I understand the following:

1 My child volunteers to participate in the study and has the right to withdraw from the project at any time.
2 My child and I have received an explanation about the nature of the study and its purpose, methods and procedures (through a letter and discussion with the researcher).
3 There is no danger of physical or psychological harm to my child.
4 The data collected and any resulting data will be confidential. My child and I will remain anonymous in any printed material produced or in any oral presentation.
5 I grant Jim Jenkyns permission to access my child's report card, to record the numerical scores for language arts, math, science, and social studies.

Signature of Parent / Guardian	Name of Parent / Guardian (Print Last Name, First Name)
Signature of Child	Name of Child (Print Last Name, First Name)
Date of Signature	Signature of Researcher (Jim Jenkyns)

Please return this completed form to your classroom teacher by May 30, 1997. Keep the covering letter for your records. You will receive a copy of the completed consent form. Thank you.

Jim Jenkyns
c/o Dr. Linda Thompson
P-407 Van Vliet Centre
Faculty of Physical Education & Recreation
University of Alberta
Edmonton, AB, T6G 2H9

Appendix E

Self-Perception Profile for Children (SPC)

What I Am Like

What I Am Like

ID_____

	Really True For me	Sort of True For me				Sort of True For me	Really True For me
A.	☐	☐	Some kids would rather play outdoors in their spare time	BUT	Other kids would rather Watch T. V.	☐	☐
1.	☐	☐	Some kids feel that they are very good at their school work	BUT	Other kids worry about whether they can do the school work assigned to them.	☐	☐
2.	☐	☐	Some kids do very well At all kinds of sports	BUT	Other kids don't feel that they are very good when it comes to sports.	☐	☐
3.	☐	☐	Some kids feel like they are just as smart as other kids their age	BUT	Other kids aren't so sure and wonder if they are as smart.	☐	☐
4.	☐	☐	Some kids wish they could do a lot better at sports	BUT	Other kids feel they are good enough at sports.	☐	☐
5.	☐	☐	Some kids are pretty slow in finishing their school work	BUT	Other kids can do their school work quickly.	☐	☐
6.	☐	☐	Some kids think they could do well at just about any new sports activity they haven't tried before	BUT	Other kids are afraid they might not do well at sports they haven't ever tried.	☐	☐
7.	☐	☐	Some kids often forget what they learn	BUT	Other kids can remember things easily.	☐	☐

	Really True For me	Sort of True For me				Sort of True For me	Really True For me
8.	☐	☐	Some kids feel that they are better than others their age at sports	BUT	Other kids don't feel they can play as well.	☐	☐
9.	☐	☐	Some kids do very well At their classwork	BUT	Other kids don't do very well at their classwork.	☐	☐
10	☐	☐	In games and sports Some kids usually watch Instead of play	BUT	Other kids usually play rather than just watch.	☐	☐
11.	☐	☐	Some kids have trouble figuring out the answers in school	BUT	Other kids almost always can figure out the answers.	☐	☐
12	☐	☐	Some kids don't do well At new outdoor games	BUT	Other kids are good at new games right away.	☐	☐

Susan Harter. Ph.D. University of Denver. 1985

Appendix F

Leisure Time Exercise Questionnaire - Modified

Seven Day Recall

LTEQ-M

Leisure Time Exercise Questionnaire - Modified
LTEQ-M
Seven Day Recall of Play and Sports

Name_____

Please check the activities you did yesterday if **both** of the following are true.

1. You did the activity during your **free time** (recess, lunch, before or after school). Do **not** include your gym class activity.

2. You did the activity for at least **15 minutes** duration.
   How long is 15 minutes? Fifteen minutes is **all** of recess. Your gym class is two 15 minute blocks of time.

Day	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday
Activity							
Aerobic	O	O	O	O	O	O	O
Badminton	O	O	O	O	O	O	O
Baseball	O	O	O	O	O	O	O
Basketball	O	O	O	O	O	O	O
Bowling	O	O	O	O	O	O	O
Chores at home	O	O	O	O	O	O	O
Cycling	O	O	O	O	O	O	O
Dancing	O	O	O	O	O	O	O
Football	O	O	O	O	O	O	O
Golf	O	O	O	O	O	O	O
Ice Hockey	O	O	O	O	O	O	O
Jogging	O	O	O	O	O	O	O
Martial Arts	O	O	O	O	O	O	O
Roller Blading	O	O	O	O	O	O	O
Running	O	O	O	O	O	O	O
Skipping	O	O	O	O	O	O	O
Skate boarding	O	O	O	O	O	O	O
Soccer	O	O	O	O	O	O	O
Tag Type Games	O	O	O	O	O	O	O
Street Hockey	O	O	O	O	O	O	O
Walking	O	O	O	O	O	O	O
Others							
	O	O	O	O	O	O	O
	O	O	O	O	O	O	O
	O	O	O	O	O	O	O
	O	O	O	O	O	O	O
	O	O	O	O	O	O	O

Appendix G

Cueing Chart for LTEQ-M

Cueing Chart

Review your day from morning to night.

1. What did you play or do **before school**? Did you play for 15 continuous minutes?
2. What did you play or do **at recess**? Did you play for all of recess?
3. What did you play or do at **lunch time**? Did you play for 15 continuous minutes?
4. What did you play or do **after school**? Did you play for 15 continuous minutes?
5. What did you play or do **after supper**? Did you play for 15 continuous minutes?

Appendix H

Year Recall of Leisure Time Activity

YR-LTA

Faculty of Physical Education and Recreation
E-407 Van Vliet Centre,
University of Alberta
Edmonton , Alberta.
T6G 2H9

Dear Parents or Guardians,

I am interested in an overall picture of your child's leisure time activity. When recalling your child's activity, do not include any activities done in gym class. I would like to know about your child's involvement with community sports team and clubs. As well as any lessons that are physical in nature, such as dance or tennis lessons that your child is taking. Please fill out this leisure time activity questionnaire on the following page with your child. To help you and your child with this questionnaire here are two definitions.

1. A **sports club** has organized games and practices. Examples are the Torpedo swim club, or the community Atom Hockey team.

2. **Lessons** are physical activities that are taken in the form of a lesson such as ballet lessons.

To maintain your child's anonymity their name on the questionnaire will be blacked out with a felt pen and their ID number will replace it. To maintain your anonymity your signature on the questionnaire will also be blacked out. Your signature is to validate the information listed on the questionnaire.

To assist you with the recall portion I recommend you cue your memory by reviewing the year by seasons; summer '96, fall '96, winter '96 -'97 and spring '97.

Please have your child return the second page of this questionnaire to their classroom teacher by June 11, 1997.

Thank you for your cooperation with the completion of this questionnaire.

Jim Jenkyns

Year Recall of Leisure Time Activity (YR-LTA)

Child's name_____

1. List the organized sport clubs, and lessons in which you have participated, during your free time, if both of the following are true.

The participation took place in the last **12 months**. **AND** the activity was sponsored by the **school** (intramurals or interscholastic)

	Name of Activity
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

2. List the organized sport clubs, and lessons in which you have participated, during your free time, if both of the following are true.

The participation took place in the last **12 months AND** the activity was sponsored by the **community**, private fitness club or private school.

	Name of Activity
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

I have read the list of activities my son/daughter has listed above and verify that he/she did participate in all the listed activities in the last 12 months.

Parents signature _____

Appendix I

CBE Elementary Report Card

Student Name_____

Grade _____ School Year _____

Teacher (s) _____

OLYMPIC HEIGHTS SCHOOL

875 Strathcona Drive S.W., Calgary, Alberta T3H 2Z7

Telephone: (403) 777-8370 Fax: (403) 777-8373

Principal: Miss Sheila Campbell

Calgary Board of Education

ELEMENTARY REPORT CARD

MESSAGE TO PARENTS

This Elementary Report Card has been developed through collaboration with parents and educators. It is but one component of the ongoing communication to parents about student progress. It reflects your child's achievement (relative to the learning expectations set out in the Alberta Education Program of Studies and indicates teachers' observations of effort and personal growth. Conferences are a critical component of the reporting process. We encourage your participation in these conferences with your child's teacher at which time you will receive additional information about your child's learning.

P. James Dean
Superintendent
Elementary Education

ACHIEVEMENT INDICATORS EXPLAINED

1 Excellent achievement of learning expectations; grasps new concepts quickly, consistently achieves more and takes initiative to learn more than is required.

2 Very good achievement of learning expectations; grasps most new concepts quickly, frequently shows initiative and achieves more than is required.

3 Satisfactory achievement of learning expectations; meets expectations for this grade level and does what is required.

4 Improvement needed in meeting learning expectations; requires repeated instruction to achieve, and support to complete assignments.

5 Unsatisfactory achievement of learning expectations; finds great difficulty in completing assignments.

Student's Name _____

School _____ Grade _____

Academic progress is reported relative to the learner expectations outlined in the Alberta Program of Studies for the grade level indicated on the front of the Report Card.

Achievement Indicators

1 - Excellent achievement of learning expectations
2 - Very Good achievement of learning expectations
3 - Satisfactory achievement of learning expectations
4 - Improvement needed in meeting learning expectations
5 - Unsatisfactory achievement of learning expectations

* Modified program (see comments or attached document)
N/A Not Applicable at this time

Effort & Personal Growth Observed

C - Consistently
O - Often
S - Sometimes
N - Not yet

PERSONAL GROWTH

Social and Personal Development	Reporting Period 1	2	3	4
Shows a positive attitude towards learning	CONFERENCE ONLY			
Accepts responsibility for own behavior				
Respects school and personal property				
Respects the rights of others				
Follows school and classroom routines				
Attempts to solve social problems in appropriate ways				

Work Habits	Reporting Period 1	2	3	4
Works independently	CONFERENCE ONLY			
Works cooperatively				
Uses time effectively				
Completes assignments				

LANGUAGE ARTS

Reading

	Reporting Period 1	2	3	4
Effort	CONFERENCE ONLY			
Demonstrates interest in and enjoyment in reading				
Understands fictional material (e.g., character development, events . . .)				
Understands informational material (text, graphs, charts...)				
Reads fluently and with expression				
Uses various methods to identify words				

Writing

	Reporting Period 1	2	3	4
Effort	CONFERENCE ONLY			
Produces writing/illustrations which convey purpose and meaning				
Develops and organizes information and ideas				
Edits to strengthen composition and reduce errors				
Applies knowledge of grammar and punctuation				
Applies knowledge of spelling				
Uses technology to produce work				
Writes/prints legibly in daily work				

Listening & Speaking

	Reporting Period 1	2	3	4
Effort	CONFERENCE ONLY			
Shows evidence of understanding after listening				
Listens and clearly responds to others' ideas or viewpoints				
Effectively communicates information, ideas and needs				

MATHEMATICS

	Reporting Period 1	2	3	4
Effort	CONFERENCE ONLY			
Demonstrates mathematical understanding in a variety of problem solving situations				
Communicates mathematical thinking through writing, speaking, use of symbols, pictures or models				
Connects concepts				
Makes connections within mathematics and to other situations				

SCIENCE	Reporting Period 1	2	3	4
Effort	CONFERENCE ONLY			
Applies scientific learning while creating/solving problems				
Communicates scientific understanding				
Understands scientific processes				
Makes connections within science and to other situations				

SOCIAL STUDIES	Reporting Period 1	2	3	4
Effort	CONFERENCE ONLY			
Understands information, ideas and issues				
Locates, organizes, interprets and presents information				
Demonstrates mapping and geography skills				

PHYSICAL EDUCATION	Reporting Period 1	2	3	4
Effort	CONFERENCE ONLY			
Applies skills and knowledge				
Cooperates and is a good sport				

HEALTH	Reporting Period 1	2	3	4
Effort	CONF. ONLY			
Applies skills and knowledge				

ART	Reporting Period 1	2	3	4
Effort	CONFERENCE ONLY			
Applies skills and knowledge				
Displays interest in and appreciation of art				

MUSIC	Reporting Period 1	2	3	4
Effort	CONFERENCE ONLY			
Applies skills and knowledge				
Displays interest in and appreciation of music				

FRENCH (optional)	Reporting Period 1	2	3	4
Effort	CONF. ONLY			
Applies skills and knowledge				

DRAMA (optional)	Reporting Period 1	2	3	4
Effort	CONFERENCE ONLY			
Applies skills and knowledge				
Displays interest in and appreciation of drama				

ATTENDANCE				
REPORTING PERIOD	1	2	3	4
POSSIBLE DAYS IN ATTENDANCE				
DAYS ABSENT				
TIMES LATE				

1 CONFERENCE ONLY

Conference attended by: _____

_____

_____

Please indicate you have received this report card by signing and returning.

2 Report Card Received:

_____

Parent/Guardian Signature

Conference attended by: _____

_____

_____

3 Report Card Received:

_____

Parent/Guardian Signature

Conference attended by: _____

_____

_____

4 ADMINISTRATIVE PLACEMENT FOR NEXT SCHOOL YEAR _____

Grade

_____

Teacher Signature

_____

Date

CONFERENCE BY REQUEST ONLY.

Appendix J

Academic Achievement Recording Sheet

ID number _____

Reading mean

Writing

Listening/Speaking

Mathematics

Science

Social Studies

Overall Mean

ID number _____

Reading mean

Writing

Listening/Speaking

Mathematics

Science

Social Studies

Overall Mean

ID number _____

Reading mean

Writing

Listening/Speaking

Mathematics

Science

Social Studies

Overall Mean

ID number _____

Reading mean

Writing

Listening/Speaking

Mathematics

Science

Social Studies

Overall Mean

ID number _____

Reading mean

Writing

Listening/Speaking

Mathematics

Science

Social Studies

Overall Mean

ID number _____

Reading mean

Writing

Listening/Speaking

Mathematics

Science

Social Studies

Overall Mean

Appendix K

An Example of a Completed Report Card

Student's Name [redacted]

School [redacted] Grade 4

Academic progress is reported relative to the learner expectations outlined in the Alberta Program of Studies for the grade level indicated on the front of the Report Card.

Achievement Indicators

1 - Excellent achievement of learner expectations
2 - Very Good achievement of learner expectations
3 - Satisfactory achievement of learner expectations
4 - Improvement needed in meeting learner expectations
5 - Unsatisfactory achievement of learner expectations

* Modified program (see comments or attached documents)
N/A Not Applicable at this time

Effort & Personal Growth Observed

C - Consistently
O - Often
S - Sometimes
N - Not yet

LANGUAGE ARTS

Reading	Reporting Period 1	2	3
Effort		C	C
Demonstrates interest in and enjoyment of reading		1	1
Understands fictional material (plot, character development, events . . .)		2	1
Understands informational material (text, graphs, charts..)		2	2
Reads fluently and with expression		1	1
Uses various methods to identify words		NA	4
		1	

Writing	Reporting Period 1	2	3
Effort		O	O
Produces writing/illustrations which convey purpose and meaning		2	2
Develops and organizes information and ideas		2	1
Edits to strengthen composition and reduce errors		3	3
Applies knowledge of grammar and punctuation		3	3
Applies knowledge of spelling		3	2
Uses technology to produce work		3	2
Writes/prints legibly in daily work		4	3
Spelling Tests		2	1

Listening & Speaking	Reporting Period 1	2	3
Effort		C	C
Shows evidence of understanding after listening		2	2
Listens and clearly responds to others' ideas or viewpoints		2	2
Effectively communicates information, ideas and needs		2	2

MATHEMATICS

	Reporting Period 1	2	3
Effort		C	O
Demonstrates mathematical understanding in a variety of problem solving situations		2	3
Communicates mathematical thinking through writing, speaking, use of symbols, pictures or models		2	1
Computes accurately		1	1
Makes connections within mathematics and to other situations		3	2
Basic facts		1	1

PERSONAL GROWTH

Social and Personal Development	Reporting Period 1	2	3	4
Shows a positive attitude towards learning		O	C	
Accepts responsibility for own behavior		O	C	
Respects school and personal property		C	C	
Respects the rights of others		O	O	
Follows school and classroom routines		C	C	
Attempts to solve social problems in appropriate ways		C	C	

Work Habits	Reporting Period 1	2	3	4
Works independently		C	C	
Works cooperatively		C	C	
Uses time effectively		O	C	
Completes assignments		O	C	

SCIENCE	Reporting Period 1	2	3	4
Effort	CONFERENCE ONLY	S	O	
Applies scientific learning while creating, solving problems		3	3	
Communicates scientific understandings		3	2	
Understands scientific processes		4	3	
Makes connections within science and to other situations		3	3	

SOCIAL STUDIES	Reporting Period 1	2	3	4
Effort	CONFERENCE ONLY	O	C	
Understands information, ideas and issues		2	2	
Locates, organizes, interprets and presents information		3	2	
Demonstrates mapping and geography skills		3	2	

PHYSICAL EDUCATION	Reporting Period 1	2	3	4
Effort	CONFERENCE ONLY	C	C	
Applies skills and knowledge		2	2	
Cooperates and is a good sport		3	2	

HEALTH	Reporting Period 1	2	3	4
Effort	CONF. ONLY	C	C	
Applies skills and knowledge		2	2	

ART	Reporting Period 1	2	3	4
Effort	CONFERENCE ONLY	C	C	
Applies skills and knowledge		2	2	
Displays interest in and appreciation of art		2	2	

MUSIC	Reporting Period 1	2	3	4
Effort	CONFERENCE ONLY	S	O	
Applies skills and knowledge		3	3	
Displays interest in and appreciation of music		3	3	

FRENCH (optional)	Reporting Period 1	2	3	4
Effort	CONF. ONLY	C	C	
Applies skills and knowledge		2	1	

DRAMA (optional)	Reporting Period 1	2	3	4
Effort	CONFERENCE ONLY	O	NA	
Applies skills and knowledge		NA	NA	
Displays interest in and appreciation of drama		3	NA	

ATTENDANCE	2	3	4
REPORTING PERIOD			
POSSIBLE DAYS IN ATTENDANCE	52	65	
DAYS ABSENT	0	0	
TIMES LATE	0	0	

1 CONFERENCE ONLY

Conference attended by: _____

[redacted]

Please indicate you have received this report card by signing and returnin

2 Report Card Received:

[redacted]

Parent/Guardian Signature

Conference attended by: _____

[redacted]

3 Report Card Received:

_____

Parent/Guardian Signature

Conference attended by: _____

4 ADMINISTRATIVE PLACEMENT FOR NEXT SCHOOL YEAR _____

Grade

_____

Teacher Signature

_____

Date

CONFERENCE BY REQUEST ONLY

Appendix L

Formulas and Calculations for Reversal of AA Scale and Outliers

Calibration of AA scale.

I.e., the distance AA is from 1 on a number line is equal to the distance AA2 is from 5 on a number line

Given: AA is the mean score for each participant from the report card.

Then: AA2 is the ascending mean score for data analysis.

$1 - AA = y$ and $5 + y = AA2$ Therefore by substitution $5 + y = AA2$ becomes

$5 + (1 - AA) = AA2$. Which simplifies to be

$6 - AA = AA2$.

All the AA scores were put through this equation using SPSS (1996) and labeled AA2.

Calculation of Outliers

For the purposes of this study, an outlier was a score that was more than two *SD* from the *M*.

1. From the entire population of participants the program SPSS (1996) calculated the *M* and *SD*.

2. The researcher manually solved the *z* score formula $z = (x - M)/SD$ for every variable. Solving for $z = +2$ and -2.

3. The value of x for a *z* score of +2 and –2 was then used to remove the outliers from an ascending ranked list of the scores for each variable. This new list was used to perform the data analysis with the exclusion of the outliers.